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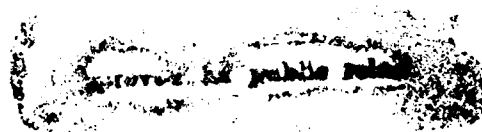
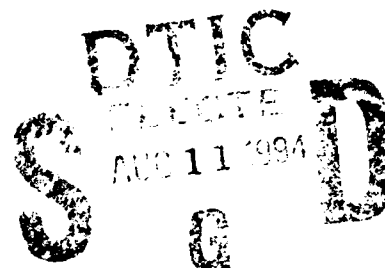
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MEASUREMENTS IN THE TURBULENT BOUNDARY LAYER AT CONSTANT PRESSURE IN SUBSONIC AND SUPERSONIC FLOW

Part I. Mean Flow

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May 1978

Final Report for Task I of AEDC-TR-78-21 - May 1978

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The present Part I of this report is limited to a description of the mean flow as observed using Pitot-tube, Preston-tube, and floating-element instrumentation. Emphasis is on the use of similarity laws with Van Driest scaling and on the inference of the shearing-stress profile and the normal velocity component from the equations of mean motion. The experimental data are tabulated.

Part II of this work, published separately, is a description of the mean flow and Reynolds-stress field as observed in the same flows using a single-particle laser-Doppler velocimeter.

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Summary

Experiments have been carried out to test the accuracy of laser-Doppler instrumentation for measurement of Reynolds stresses in turbulent boundary layers in supersonic flow. Two facilities were used to study flow at constant pressure. In one facility, data were obtained on a flat plate at $M_e = 0.1$, with Re_θ up to 8,000. In the other, data were obtained on an adiabatic nozzle wall at $M_e = 0.6, 0.8, 1.0, 1.3$, and 2.2 , with $Re_\theta = 23,000$ and $40,000$. The present Part I of this report is limited to a description of the mean flow as observed using Pitot-tube, Preston-tube, and floating-element instrumentation. Emphasis is on the use of similarity laws with Van Driest scaling and on the inference of the shearing-stress profile and the normal velocity component from the equations of mean motion. The experimental data are tabulated.

Part II of this report, published separately, is a description of the mean flow and Reynolds-stress field as observed in the same flows using a single-particle laser-Doppler velocimeter.

Preface

This report represents the results of one phase of research carried out at the Jet Propulsion Laboratory of the California Institute of Technology, under Contract NAS 7-100. The work described in this report was supported by the United States Air Force, Office of Scientific Research, under Contract F 44620-75-C-0007; by the Arnold Engineering Development Center, under MIPR EY 7483-76-0003 and EY 7483-76-0009; and by the California Institute of Technology, President's Fund, under Grant PF-075. The Program Element No. was 65807F.

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I. Introduction

The turbulent boundary layer at constant pressure has been studied experimentally and theoretically for many years. Collected experimental mean-velocity data for low-speed flow have been carefully reviewed by Coles (1962, Appendix A), who recommends taking the measurements by Wieghardt (1943) as the best available standard. A catalog and a comparable review of mean-velocity data for high-speed flow (including flow with pressure gradient) are presently being prepared for AGARD by Fernholz and Finley (1977). One method being used by Fernholz (1976) to organize the information in this AGARD catalog is recasting of the compressible-flow results into a form appropriate for incompressible flow. For this purpose, the wall-wake model for the mean-velocity profile (a model which has been thoroughly exercised for incompressible flow by Coles (1968)) and the mixing-length scaling proposed for compressible flow by Van Driest (1951) appear to be quite useful.

Measurements of Reynolds stresses in high-speed turbulent boundary layers are rare. For incompressible flow, the turbulent shearing stress can be measured directly, or it can be calculated from the distribution of mean velocity with the aid of well-established similarity laws. Good agreement between measured and calculated values, as in the case of the hot-wire measurements by Klebanoff (1954), helps to establish confidence in the extension of hot-wire methods to more complicated flows. Recent measurements by Johnson and Rose (1973), Yanta and Lee (1974), and Abbiss (1976) have attempted to extend this process to the use of laser-Doppler instrumentation in supersonic flow at Mach numbers in the range 1.5 to 3.0. However, a serious anomaly appears in the case of the turbulent shearing stress, defined as $-\rho u'v'$. The maximum value occurs much further from the wall than is reasonable for flow at constant

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pressure. The anomaly has been discussed by Sandborn (1974), who supports the conjecture by some of the authors cited that density fluctuations may contribute substantially to the turbulent stresses near the wall. This conjecture is in direct opposition to the conclusion by Morkovin (1961) that effects of density fluctuations should be small compared to effects of variations in mean density for Mach numbers up to 4 or 5.

The purpose of the present experiments is to obtain redundant data over a substantial range of Mach numbers ($M_e = 0.1$ to 2.2), in an effort to resolve the anomaly in turbulent shearing stress. Essentially the same range of Mach numbers has also been studied by Winter and Gaudet (1970), who used a Pitot tube to determine mean velocity and a floating-element balance to determine surface friction. However, no measurements were made of turbulent stresses.

The present measurements have sufficient redundancy to permit a realistic assessment of their accuracy. The primary instrumentation is a Pitot tube which traverses the boundary layer. In addition, surface-friction measurements are made using both a floating-element balance and a Preston tube. The mean-flow scaling suggested by Van Driest is applied to the data, to test the adequacy of a single similarity formulation for both compressible and incompressible flow, and the shearing-stress distribution is calculated as part of the analysis.

The results are discussed in Part I of this work. An Appendix contains a complete record of the experimental data in tabular and graphic form.

A laser-Doppler velocimeter has also been used to measure mean velocity and three components of Reynolds stress in the same flow. The results of the LDV studies will be reported by P. E. Dimotakis, D. J. Collins, and D. B. Lang in Part II of this work.

II. Flow Facilities

A. High-Speed Flow

Measurements were made in the ceiling boundary layer of the 20-inch wind tunnel at the Jet Propulsion Laboratory, at nominal free-stream Mach numbers M_e of 0.6, 0.8, 1.0, 1.3, and 2.2, at nominal Reynolds numbers Re_θ of 23,000 and 40,000. The JPL facility is a continuously operating, variable-density tunnel, with a test section 45.7 cm wide by 50.8 cm high. The top and bottom walls of the tunnel diverge slightly to compensate for boundary-layer growth.

For the present experiments, the region of uniform flow in the test section was extended approximately 150 cm beyond the end of the flexible nozzle, or 60 cm beyond the center of the schlieren windows, by installation of a pair of instrumented flat plates on the floor and ceiling of the tunnel. Particular care was taken to obtain a smooth junction between the plates and the nozzle wall.

From the experience, for example, of Liepmann and Ashkenas (1947), it has long been known that the experimental treatment of the downstream boundary condition is important at transonic speeds. The unsteady behavior often observed in transonic shock-wave boundary-layer interactions may be partly a consequence of unsteady flows generated in the diffuser. For the present experiments, stable flow at high subsonic free-stream Mach numbers was achieved by introducing a variable-thickness double-diamond airfoil choke in the diffuser.* The choke was oriented vertically in the diffuser, normal to the test plate, with the leading edge of the choke located 70 cm downstream from the balance station.

*The advice of H. Ashkenas during this development is much appreciated.

The point of maximum thickness was located 15 cm further downstream. Flow past the choke was relieved by expanding the diffuser doors by 7.3° on each side in order to maintain constant area at the minimum thickness setting. High-speed schlieren movies showed that this arrangement eliminated the upstream-running waves observed in previous experiments and provided a quiet environment in which to perform transonic boundary-layer experiments.

Local static pressure was measured at 82 static-pressure orifices located throughout the test section and diffuser. The measurements used the JPL multiport measuring system, which simultaneously recorded the stagnation temperature and pressure, the free-stream static pressure, and the pressure from two 0-15 psia Statham pressure transducers, each of which sequentially sampled 50 orifices.

Typical free-stream Mach-number distributions for the present experiments are shown in Fig. 1. There is no substantial pressure gradient over a distance of about 140 cm upstream and about 40 cm downstream from the balance station.

B. Low-Speed Flow

Additional measurements were made in the Merrill wind tunnel of the Graduate Aeronautical Laboratories at the California Institute of Technology, at a free-stream velocity of 37 m/sec. This tunnel is a continuously operating closed-return facility with the downstream end of the test section vented to ambient pressure. The test section is 115 cm wide by 82 cm high and has diverging walls to account for boundary-layer growth.

The test plate for these experiments was made from 1.9-cm thick plywood, surfaced on both sides with 1-mm thick formica to provide a smooth finish. The leading edge was elliptical, with a transition strip located immediately

downstream from the elliptical section. The horizontal plate spanned the test section and extended 244 cm downstream from the beginning of the test section. The plate was supported from the ceiling of the tunnel, and all measurements were made on the lower surface.

Twenty static pressure taps were provided on the surface of the plate. A Scanivalve was used to select the pressure to be read by a Barocel digital manometer. The resulting free-stream Mach-number distribution, shown in Fig. 2, indicates that pressure-gradient effects should be small.

III. Pitot-Pressure Data

A. Instrumentation

For the experiments at JPL, a Pitot-pressure probe could be introduced into the boundary layer through the ceiling of the tunnel at any one of the five axial stations listed in Table 1. The origin for the x-coordinate is the center of the floating-element friction balance, 11.3 cm downstream from the junction between the nozzle wall and the test plate. During the probe measurements, the balance was replaced by a blank port which was instrumented with static-pressure taps.

The Pitot-pressure probe was constructed from stainless steel hypodermic tubing. The probe tip was formed by flattening 0.127-cm diameter tubing to an oval measuring 0.0127 cm inside (in the direction normal to the plate), with the lip thickness honed to 0.003 cm. The center of the support stem was 5.08 cm downstream from the probe tip. The probe position, the Pitot pressure, the tunnel stagnation temperature, and the tunnel stagnation and static pressures were recorded by the data system.

For the experiments at CIT, two techniques were employed. Within the first 100 cm from the leading edge of the plate, Pitot measurements were made

using a seven-tube rake. Further downstream, Pitot measurements were made by traversing a small probe through the boundary layer, as in the high-speed experiments. The probe tip was flattened to an oval measuring 0.0203 cm inside (in the direction normal to the plate), with a lip thickness of 0.020 cm. Boundary-layer measurements were made at the stations listed in Table 2.

B. Data Reduction

For each Pitot-pressure profile, a change of slope in the pressure data was used to define the point of contact of the probe with the wall. No displacement correction was made. The free-stream static pressure for each profile was taken as the average static pressure in the tr section in the vicinity of the probe. The flow properties at the edge of the boundary layer were then computed using the average Pitot pressure well outside the boundary layer. Assuming constant static pressure, the local Mach number was computed either directly or through the normal shock relations, as appropriate.

The local stagnation temperature in the boundary layer was not measured. However, for the JPL experiments, the temperature measured by a thermocouple embedded in the surface-friction balance structure indicated that the flow was essentially adiabatic. Hence the temperature may be estimated from a variant of the adiabatic Crocco relation,*

*Equation (1) is often used in the reduction of experimental data, despite the fact that it does not conserve energy in adiabatic flow. The present data analysis assumes that p and M are measured exactly. Hence so are $T_o/T = 1 + (\gamma-1)M^2/2$, $u/(\gamma RT)^{1/2} = M$, and $\rho u^2 = \gamma p M^2$. If use of Eq. (1) introduces a local relative error of ϵ in T_o , the relative errors in T , u , ρ , and ρu are ϵ , $\epsilon/2$, $-\epsilon$, and $-\epsilon/2$, respectively.

$$\frac{T}{T_e} = \frac{\rho_e}{\rho} = 1 + r \left(\frac{\gamma-1}{2} \right) M_e^2 \left[1 - \left(\frac{u}{u_e} \right)^2 \right] = \frac{1 + r \left(\frac{\gamma-1}{2} \right) M_e^2}{1 + r \left(\frac{\gamma-1}{2} \right) M^2} \quad (1)$$

where the recovery factor r is defined by

$$r = \frac{T_w - T_e}{T_{o_e} - T_e} \quad (2)$$

and is assigned the constant value $r = 0.885$.

C. Results for the Mean Flow

Typical mean-velocity profiles measured at the balance station (JPL-4) for nominal Reynolds numbers Re_θ of 23,000 and 40,000 are presented in Figs. 3 and 4. Values for viscosity are obtained from the Sutherland viscosity law,

$$\frac{\mu}{\mu_r} = \left(\frac{T_r + S}{T + S} \right) \left(\frac{T}{T_r} \right)^{3/2} \quad (3)$$

where $T_r = 291.75^\circ\text{K}$, $S = 110^\circ\text{K}$, and $\mu_r = 1.827 \times 10^{-4}$ gm/cm-sec. One profile at $Re_\theta = 8000$ from the low-speed experiments (CIT-9) is also included in the figures for comparison. A complete data tabulation appears in the Appendix.

Integral thicknesses for the boundary layer are computed from

$$\delta^* = \int_0^\delta \left(1 - \frac{\rho u}{\rho_e u_e} \right) dy \quad (4)$$

and

$$\theta = \int_0^\delta \frac{\rho u}{\rho_e u_e} \left(1 - \frac{u}{u_e} \right) dy \quad (5)$$

The boundary-layer form parameter H is defined as

$$H = \frac{\delta^*}{\theta} \quad (6)$$

For two-dimensional mean flow, the surface friction can be obtained from von Kármán's momentum-integral equation,

$$C_f = 2 \frac{d\theta}{dx} - 2 \left(2 + H - M_e^2 \right) \frac{\rho}{\rho_e} \frac{1}{P} \frac{dP}{dx} \quad (7)$$

The accuracy of Eq. (7) is expected to be low, primarily because of difficulty in differentiating experimental data for $\theta(x)$ and $u_e(x)$ (see Table A3 of the Appendix). For the present measurements, the second term in Eq. (7) is at most 3 percent of the first term, and is uncertain by a comparable amount. Hence this term has been discarded. Values for $C_f = 2 d\theta/dx$ are listed in Table 3, which compares values obtained for C_f by this and several other methods.

D. Van Driest Scaling

The compressibility transformation proposed by Van Driest (1951) uses the mixing-length expression

$$\tau = \tau_w = \rho l^2 \left(\frac{du}{dy} \right)^2 \quad (8)$$

together with Prandtl's hypothesis

$$l = \kappa y \quad (9)$$

to obtain

$$\rho^{1/2} \frac{du}{dy} = \frac{\tau_w}{\kappa y} \quad (10)$$

The appearance of the combination $(\rho^{1/2} du)$ suggests that the velocity u should be replaced by an effective velocity u^* defined by

$$u^* = \int_0^u \left(\frac{\rho}{\rho^*} \right)^{1/2} du \quad (11)$$

where ρ^* is a constant reference density included for dimensional reasons.

Integration of the mixing-length equation (8) then gives

$$u^* = \frac{1}{\kappa} \left(\frac{\tau_w}{\rho^*} \right)^{1/2} \ln \left(\frac{y}{y^*} \right) + \text{constant} \quad (12)$$

where y^* is a constant reference length also included for dimensional reasons.

Equation (12) is typical of mixing-length formulas in that it is at best an unclear description of a small fragment of the mean-velocity profile. The choice for ρ^* and y^* and the value of the constant in Eq. (12) are customarily resolved by emphasizing quantities evaluated at the wall. For example, the definition (11) is readily integrated in closed form for the energy integral (1). The result is the Van Driest scaling for velocity in the case of adiabatic flow,

$$\kappa \left(\frac{\rho^*}{\rho_w} \right)^{1/2} \frac{u^*}{u_e} = \sin^{-1} \left(\kappa \frac{u}{u_e} \right) \quad (13)$$

where m , defined by

$$m^2 = \frac{T_w - T_e}{T_w} = \frac{r \left(\frac{\gamma-1}{2} \right) M_e^2}{1 + r \left(\frac{\gamma-1}{2} \right) M_e^2} \quad (14)$$

obviously cannot exceed unity.

The form of Eqs. (12) and (13) suggests, but does not require, choosing $\rho^* = \rho_w$ and $y^* = v_w/u_\tau$, where

$$u_\tau = \left(\frac{\tau_w}{\rho_w} \right)^{1/2} \quad (15)$$

is the friction velocity. The choice $y^* = v_w/u_\tau$, in particular, is necessary if the functional dependence of u on y in Eq. (12) is to hold at the wall. Such reasoning, however, is not part of the mixing-length argument, which applies only outside the sublayer. Given these choices, then in a usual notation Eq. (12) becomes

$$u^+ = \frac{1}{\kappa} \ln y^+ + c \quad (16)$$

where

$$u^+ = \frac{u^*}{u_\tau}, \quad y^+ = \frac{y u_\tau}{v_w} \quad (17)$$

and

$$m \frac{u^*}{u_e} = \sin^{-1} \left(m \frac{u}{u_e} \right) \quad (18)$$

The choice for ρ^* , u_τ , and y^* is important because it controls the dependence of κ and c on M_e and γ . What is wanted is the particular choice which minimizes this dependence. There is substantial evidence, for example, in papers by Fenter and Stalmach (1957), Rotta (1960), Moore and Harkness (1964), Maise and McDonald (1968), Michel, Quemart, and Elena (1969), Danberg (1971), Squire (1971), and Fernholz (1976), that use of wall quantities as in Eqs. (16)-(18) is very nearly optimum from this point of view, at least for adiabatic flow at constant pressure at Mach numbers up to 5.

Most of these authors have also gone beyond the mixing-length argument to consider a more general fit to a defect law or to a combined wall-wake formulation of the mean profile, in the manner adopted by Coles (1968) for low-speed flow; i.e., a fit to

$$u^+ = \frac{1}{\kappa} \ln y^+ + c + 2 \frac{\Pi}{\kappa} \sin^2 Y, \quad (19)$$

where

$$Y = \frac{\Pi}{2} \frac{y}{\delta}. \quad (20)$$

Such a fit has been carried out for the present measurements, with quite satisfactory results. The constants κ and c are given their incompressible values, $\kappa = 0.41$ and $c = 5.0$. The parameters u_τ , Π , and δ are then determined by a two-parameter least-squares fit of the experimental data to Eq. (19), taking as a third condition the constraint imposed by the local friction law,

$$u_e^+ = \frac{1}{\kappa} \ln \delta^+ + c + 2 \frac{\Pi}{\kappa}. \quad (21)$$

As proposed by Coles (1968), data near the wall and near the free stream are excluded. For the JPL experiments, data are retained for $y^+ \geq 200$ and $y/\delta \leq 0.95$. For the CIT experiments, data are retained for $y^+ \geq 80$ and $y/\delta \leq 0.95$. Typical examples of the resulting fit are shown in Fig. 5. The values obtained for δ are indicated by tick marks in Figs. 3 and 4; they correspond to values for u/u_e of 0.996 to 0.998.

The quality of Van Driest scaling, when universal constant values are assumed for κ and c , can be tested in different ways. One test is to compare values inferred for the local friction coefficient

$$C_f = 2 \frac{\rho_w}{\rho_e} \left(\frac{u_\tau}{u_e} \right)^2, \quad (22)$$

with values obtained by other means. Table 3 makes this comparison. If the floating-element data are taken as a standard, the conclusion for the present experiments is that the profile fit gives values for C_f which are slightly high. The discrepancy is small at subsonic speeds, but increases to about 6 percent at $M_e = 2.2$.

A second test is to compare values obtained for the profile parameter Π with corresponding values for low-speed flow, as defined by the low-speed data of Wieghardt (1943). This comparison is made in Fig. 6.* The main conclusion is that there is very little effect of compressibility on the shape of the mean-velocity profile in Van Driest coordinates, at least for

* The particular choice of $C_f Re_\theta$ for the abscissa in Fig. 6 (Coles 1962) is not important for these data, although it might become important if the figure included data at higher Mach numbers and lower Reynolds numbers.

Mach numbers up to 2.2. This conclusion is supported by the inclusion of a few representative points from the work by Winter and Gaudet (1970). There may be a tendency for Π to decrease slightly at large Reynolds numbers, as noted for low-speed flow by Coles (1962, Appendix A).

E. Inferred Data for v/u and τ/τ_w

The distributions of normal velocity and shearing stress through the boundary layer are of central interest in these experiments because of the direct comparison with LDV measurements to be made in Part II of this report. From the equation of continuity,

$$\rho v = - \int_0^y \frac{\partial \rho u}{\partial x} dy, \quad (23)$$

and from the equation for conservation of momentum in flow at constant pressure,

$$\tau - \tau_w = \rho uv + \int_0^y \frac{\partial \rho u^2}{\partial x} dy. \quad (24)$$

It is desired to evaluate the integrals in Eqs. (23) and (24) for the Van Driest description of the mean velocity profile with similarity, Eq. (19). A useful first step is a change of variable. Put

$$m \frac{u^*}{u_e} = U, \quad (25)$$

so that Eq. (18) becomes

$$m \frac{u}{u_e} = \sin U. \quad (26)$$

The corresponding form of Eq. (1) is

$$\frac{\rho_e}{\rho} = \frac{T_w}{T_e} \cos^2 U \quad (27)$$

These may be substituted in Eqs. (23) and (24) to obtain

$$\rho v = \rho_e u_e \frac{T_e}{T_w} \frac{d\delta}{dx} P \quad (28)$$

and

$$\tau = \tau_w - \rho_e u_e^2 \frac{T_e}{T_w} \frac{d\delta}{dx} \left(2Q - \frac{u}{u_e} P \right) \quad (29)$$

where the quantities denoted by P and Q are the definite integrals

$$\frac{d\delta}{dx} P = - \frac{1}{m} \int_0^y \frac{(1 + \sin^2 U)}{\cos^3 U} \frac{\partial U}{\partial x} dy \quad (30)$$

and

$$\frac{d\delta}{dx} Q = - \frac{1}{m^2} \int_0^y \frac{\sin U}{\cos^3 U} \frac{\partial U}{\partial x} dy \quad (31)$$

Note that $d\delta/dx$ is a phantom factor in these expressions. If Eqs. (28)

and (29) are evaluated at the edge of the boundary layer, where $\tau = 0$,

$\rho = \rho_e$, $u = u_e$, and $v = v_e$, the result is

$$\frac{v_e}{u_e} = \frac{T_e}{T_w} \frac{d\delta}{dx} P_e = \frac{d\delta^*}{dx} \quad (32)$$

and

$$\frac{\tau_w}{\rho_e u_e^2} = \frac{T_e}{T_w} \frac{d\delta}{dx} (2 Q_e - P_e) = \frac{d\theta}{dx} \quad (33)$$

It follows that

$$\frac{d\delta}{dx} P_e = \frac{T_w}{T_e} \frac{d\delta^*}{dx} \quad (34)$$

and that

$$\frac{d\delta}{dx} Q_e = \frac{1}{2} \frac{T_w}{T_e} \frac{d}{dx} (\delta^* + \theta) \quad (35)$$

Given $U(x,y)$, the most convenient form for calculation is probably the normalized form

$$\frac{v}{v_e} = \frac{\rho_e}{\rho} \frac{P}{P_e} \quad (36)$$

and

$$\frac{\tau}{\tau_w} = 1 - \frac{(2 Q - \frac{u}{u_e} P)}{(2 Q_e - P_e)} \quad (37)$$

To undo the normalization in Eq. (37), a value must be specified for $\tau_w/\rho_e u_e^2$; i.e., for C_f . The derivative $d\delta/dx$ may then be calculated from Eq. (33) and inserted in Eq. (32) to obtain a value for v_e/u_e . This value can be used in turn to undo the normalization in Eq. (36), with the result

$$\frac{v}{u} = \frac{\tau_w}{\rho_e u_e^2} \frac{\rho_e u_e}{\rho u} \frac{P}{(2 Q_e - P_e)} \quad (38)$$

The analysis so far involves only the formalism of Van Driest scaling, inasmuch as the function $U(x,y)$ has not been specified. For purposes of curve fitting, this function is defined by Eq. (19) outside the sublayer. Other authors, notably Maise and McDonald (1968) have also made calculations equivalent to using Eq. (19) in Eq. (29) to obtain the distribution of τ/τ_w . However, for accurate evaluation of the integrals P and Q near the wall, both U and $\partial U/\partial x$ need to be more accurately defined in the sublayer. We therefore revise Eq. (19) to read

$$u^+ = \frac{1}{m} \frac{u_e}{u_\tau} U = f(y^+) + 2 \frac{\Pi}{\kappa} \sin^2 Y, \quad (39)$$

and we describe the flow near the wall by an implicit formula for $f(y^+)$ proposed by Spalding (1961) and independently by Kleinstein (1967),

$$y^+ = f + e^{-\kappa f} \left[e^{\kappa f} - 1 - (\kappa f) - \frac{(\kappa f)^2}{2} - \frac{(\kappa f)^3}{6} \right] \quad (40)$$

This formula has the proper behavior near the wall, where $f = y^+ + O(y^+)^4$, and also outside the sublayer, because for $(\kappa f) \gg 1$ Eq. (40) reduces to Eq. (16). It is Eq. (40) which is plotted in the sublayer region in Fig. 5.

For Π , u_e and m constant, differentiation of Eq. (39) gives

$$\frac{1}{m} \frac{u_e}{u_\tau} \frac{\partial U}{\partial x} = \left[u^+ + y^+ f'(y^+) \right] \frac{1}{u_\tau} \frac{du_\tau}{dx} - 2 \frac{\Pi}{\kappa} Y \sin(2Y) \frac{1}{\delta} \frac{d\delta}{dx}, \quad (41)$$

where, from Eq. (40),

$$\frac{1}{f'(y^+)} = 1 + \kappa e^{-\kappa c} \left[e^{\kappa f} - 1 - (\kappa f) - \frac{(\kappa f)^2}{2} \right]. \quad (42)$$

The derivative du_τ/dx in Eq. (41) can be eliminated by noting from Eq. (21) that

$$\frac{1}{\delta} \frac{d\delta}{dx} = - (1 + \kappa u_e^+) \frac{1}{u_\tau} \frac{du_\tau}{dx}. \quad (43)$$

Consequently, the integrals P and Q may be written

$$P = \frac{1}{\delta} \frac{u_\tau}{u_e} \int_0^y \left(\frac{1 + \sin^2 U}{\cos^3 U} \right) \left[\frac{(u^+ + y^+ f')}{(\kappa u_e^+ + 1)} + 2 \Pi Y \sin(2Y) \right] dy, \quad (44)$$

and

$$Q = \frac{1}{m\delta} \frac{u_\tau}{u_e} \int_0^y \left(\frac{\sin U}{\cos^3 U} \right) \left[\frac{(u^+ + y^+ f')}{(\kappa u_e^+ + 1)} + 2 \Pi Y \sin(2Y) \right] dy. \quad (45)$$

The integrals P and Q are readily determined for a given profile once the parameters u_τ , Π , and δ are specified. For convenience of tabulation, we use experimental values for y and we determine y^+ from (17), Y from (20), U from (25), u^+ from (39), and f and f' by interpolation in (40) and (42), respectively. Thus the measured data influence the calculations only indirectly, through the fit which determines u_τ , Π , and δ .

Figures 7 and 8 show typical distributions for v/u and τ/τ_w calculated by this method, using profile parameters taken from the fit described in Section III-D. From these figures it is clear that both

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quantities scale with outer variables, and that in normalized form they are relatively insensitive to changes in Mach number and Reynolds number.

Several authors, including Meier and Rotta (1970), Bushnell and Morris (1971), Horstman and Owen (1972), and Sturek (1973), have used a different and less structured method for calculating τ/τ_w in flow at constant pressure. Instead of wall-wake similarity with Van Driest scaling, the basic assumption is that u/u_e and ρ/ρ_e are functions only of y/δ or y/θ . In the former case, the problem of defining δ must be faced at the outset. In the latter case, this problem can be postponed. For generality, we take the independent variable as y/L . Then Eq. (28) is replaced by

$$v = u \frac{dL}{dx} \left(\frac{y}{L} - \frac{\rho_e u_e}{\rho u} \int_0^{y/L} \frac{\rho u}{\rho_e u_e} d \frac{y}{L} \right), \quad (46)$$

and Eq. (29) is replaced by

$$\tau = \tau_w - \rho_e u_e^2 \frac{dL}{dx} \left(\frac{u}{u_e} \int_0^{y/L} \frac{\rho u}{\rho_e u_e} d \frac{y}{L} - \int_0^{y/L} \frac{\rho u^2}{\rho_e u_e^2} d \frac{y}{L} \right). \quad (47)$$

When the integrals extend to the free stream, these become

$$v_e = u_e \frac{\delta^*}{L} \frac{dL}{dx}, \quad (48)$$

and

$$\tau_w = \rho_e u_e^2 \frac{\theta}{L} \frac{dL}{dx}. \quad (49)$$

The last two equations are clearly not compatible if L is the same for both. To satisfy the condition $v_e/u_e = d\delta^*/dx$, it is necessary to take $L = \delta^*$. To satisfy the condition $\tau_w/\rho_e u_e^2 = d\theta/dx$, it is necessary to take $L = \theta$. In neither case is $L = \delta$ a satisfactory choice.

To illustrate the problem, some typical results according to these equations, with $L = \theta$, are compared in Figs. 9 and 10 to earlier results based on Eqs. (44) and (45). Experimental points now have a direct influence on the calculation, because they define the functions to be integrated. The distributions in the figures are therefore properly rounded in the vicinity of the boundary-layer edge, avoiding the corner which is present in the earlier results. There is a slight problem with Eqs. (46) and (47) at small values of y/θ , where the experimental values of M/M_e , u/u_e , and ρ/ρ_e are all larger (perhaps because of probe interference) than the values associated with the profile fit. The integrals thus become permanently biased during the passage through small values of y . However, the main source of the discrepancy in v/u outside the boundary layer is the fact that Eq. (48) requires $v_e/u_e = (\delta^*/\theta)d\theta/dx$, rather than the correct value $d\delta^*/dx$. When the difference $\theta d\theta/dx$ is estimated independently, using the tabulated material of the Appendix, the discrepancies in Fig. 9 are quite well accounted for. Because of these discrepancies, and because the wall-wake fit provides an unambiguous definition for δ , we consider the calculation based on Eqs. (44) and (45) to be superior.

IV. Surface-Friction Data

A. Floating-Element Balance

A floating-element balance used by Coles (1953) was recommissioned for use in the present experiments.* The only important design change was

*The expert assistance of George Tennant in preparing the balance is gratefully acknowledged.

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in the method of achieving the null position for the element. The balance, shown in Figs. 11 and 12, is a sealed unit mounted in a 23.5 cm-diameter port flush with the ceiling plate in the 20-inch wind tunnel. The original element occupies a 10-cm diameter circle which is located 5.08 cm upstream of the port centerline, as indicated in Fig. 12.

The balance is a null device with the floating element supported by a four-flexure linkage. The total force on the element is inferred from the displacement required at the supporting beam to return the element to null. In the present configuration, the supporting beam is driven by a differential micrometer powered by a small variable-speed motor. Two independent measurements were made of the beam motion. The counter shown in Fig. 11 measured the rotation of the micrometer drive shaft and counted in units of 10^{-6} inches of axial displacement. In addition, a Schaevitz coil was mechanically linked to the beam through the drive wire. The null position of the element was monitored by a second Schaevitz coil, as in the original design. The demodulated output from the Schaevitz coils was low-pass filtered with a time constant of 0.25 sec. The dashpots shown in Fig. 11 were filled with Dow Corning 710 silicone oil having a viscosity $\nu = 5.0 \text{ cm}^2/\text{sec}$. A thermocouple measured the temperature of the balance chamber.

The rectangular floating element, shown in Fig. 12, is 0.622 cm in the streamwise direction and 3.785 cm in the cross-stream direction. The area of the element is thus $A = 2.356 \text{ cm}^2$. The gap is 0.007 cm upstream and downstream when the element is nulled, and 0.010 cm on each side. The element was flush with the surrounding surface within 0.0001 cm. No correction was made to account for the effect of the gap on the measured force.

The balance was calibrated using the technique described by Coles (1953). The beam displacement required to return the element to null was measured with the balance tilted at various angles with respect to the horizontal. These measurements were repeated after adding various small weights to the element, and the results were analyzed to yield the mass of the unweighted element and the spring constant for the flexures. Four angles were used between 0.0° and 0.6° , with weights of 0, 5, 10 and 20 grams. The spring constant was measured to be 73.98 gm/cm, with a maximum deviation of 2 parts in 1000.

The JPL 20-inch tunnel is a variable-density facility. The balance was located on the tunnel ceiling, which flexes with changes in free-stream static pressure. To compensate for the resulting zero offset in the surface-friction balance, the element was covered by a thin gasket-sealed plate, which was held in place by evacuating the balance chamber, and flow was established at the desired Mach number and Reynolds number. When the balance achieved thermal equilibrium the null position of the element was measured. The flow was then bypassed, the element cover was removed, and flow was re-established at the same free-stream conditions. When thermal equilibrium was again achieved, the null position of the element was again measured. The difference between the beam positions required for null, with and without applied shearing stress, is a direct measure of the force on the element.

The measurement just described is not quite correct, because any differential pressure between the sealed balance chamber and the test section causes additional bending of the balance port. The resulting zero offset was determined with the tunnel off and with the test-section pressure set at appropriate values. The maximum correction applied to the data was 6.5 percent.

Finally, because the equilibrium temperature may not be the same for the various null measurements, effects of thermal distortion must also be considered. The zero offset from this source was measured separately; the maximum correction applied to the data was 0.4 percent. The streamwise force on the element due to free-stream pressure gradient is negligible.

Measurements using the balance were made at only one station, as indicated in Table 1. The data, together with the free-stream static and stagnation conditions, were recorded by the data-acquisition system. The surface-friction balance yields a direct measurement of the tangential stress on the floating element,

$$\tau_w = \frac{F}{A} \quad (50)$$

The associated friction coefficients,

$$C_f = 2 \frac{\tau_w}{\rho_e u_e^2} \quad (51)$$

are listed in Table 3.

B. Preston Tube

An independent estimate of surface friction was obtained from measurements with a Preston tube, a flat-faced circular cylinder in contact with the wall. For the JPL experiments, three probes were used, having outer diameters D of 0.082 cm, 0.162 cm, and 0.317 cm, with a ratio of inner to outer diameter of 0.60. The largest probe was tested only at station JPL-2. The probes were positioned at the wall by the traverse mechanism.

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For the CIT experiments, a single Preston tube was used, having an outer diameter of 0.210 cm, with a ratio of inner to outer diameter of 0.76.

There is no consensus on the question of proper interpretation of Preston-tube data at supersonic speeds. For example, Hopkins and Keener (1966) took as the geometric parameter

$$Re_D = \frac{\rho_e u_e D}{\mu_e}, \quad (52)$$

and as the response parameter, the Mach number M_p implied by the ratio of Preston-tube pressure to local static pressure. They proposed, as a correlation between this parameter M_p and the surface friction coefficient C_f , the expression

$$f_2(T') Re_D^2 \left(\frac{M_p}{M_e} \right)^2 = 32.885 \left[f_2(T') Re_D^2 C_f \right]^{1.132}, \quad (53)$$

where

$$f_2(T') = \left(\frac{\mu_e}{\mu'} \right)^2 \frac{\rho'}{\rho_e}, \quad (54)$$

with μ' and ρ' evaluated at the reference temperature T' proposed by Sommer and Short (1955),

$$\frac{T'}{T_e} = 1 + 0.035 M_e^2 + 0.45 \left(\frac{T_w}{T_e} - 1 \right). \quad (55)$$

Values of local friction coefficient C_f calculated from these equations are included in Table 3 and are listed in more detail in Table A2 of the Appendix.

Bradshaw and Unsworth (1974) have taken the position that only wall quantities should appear in any Preston-tube correlation and that it is unrealistic to insist on an explicit formula for C_f . They took as a point of departure a recent survey by Allen (1973). Using Allen's own calibration data (but not other data considered by Allen), they proposed a formula representing Patel's low-speed calibration (1965), with an additive term to account for compressibility. The formula applies for adiabatic flow and for $50 < D^+ < 1000$, where

$$D^+ = \frac{D u_\tau}{\nu_w} \quad (56)$$

and $\tau_w = \rho_w u_\tau^2$ as before.

Unfortunately, Allen has recently reported (1977) that his published friction measurements are incorrect, because of a defective or poorly calibrated balance. He did not repeat his experiment, but simply replaced the original measured values of surface friction by computed ones. He also made the corresponding revision in the Bradshaw-Unsworth formula (again using only his own revised calibration), with the final result

$$\begin{aligned} \frac{C_p}{C_f} = & 96 + 60 \log_{10} \left(\frac{D^+}{50} \right) + 23.7 \left[\log_{10} \left(\frac{D^+}{50} \right) \right]^2 \\ & + 10^4 M_\tau^2 \left[\left(D^+ \right)^{0.30} - 2.38 \right] \quad (57) \end{aligned}$$

where

$$M_\tau^2 = \frac{u_\tau^2}{\gamma R T_w} \quad (58)$$

and

$$C_p = 2 \frac{(p_p - p_s)}{\gamma p_s M_\infty^2} \quad (59)$$

Here p_p is the pressure measured by the Preston tube and p_s is the ambient static pressure.

The present Preston-tube data have also been processed in terms of Eq. (57) to obtain the values of local friction coefficient C_f which are listed in Table 3 and in Table A2 of the Appendix*.

C. Friction-Law Scaling

It has been pointed out by Spalding and Chi (1964) and others that most analytical formulations for compressible turbulent boundary layers are reducible to a description of the surface friction in terms of the surface friction for an equivalent incompressible boundary layer at a different Reynolds number. The equivalence is usually expressed by two semi-empirical scaling functions F_f and F_θ , thus:

$$C_f^i = F_f C_f \quad (60)$$

and

$$Re_\theta^i = F_\theta Re_\theta \quad (61)$$

* The experiments described in the present report should eventually be viewed as a producer rather than as a consumer of Preston-tube calibration data. However, a full-scale critique of the Preston-tube technique for supersonic flow is outside the scope of this research, and the present measurements have therefore been interpreted as if no friction-balance data were available.

For the particular case of adiabatic flow, the scaling functions

$$F_f = \frac{\left(\frac{T_w}{T_e} - 1\right)}{\left[\sin^{-1}\left(1 - \frac{T_e}{T_w}\right)^{1/2}\right]^2} = \frac{1}{(1 - m^2)} \left(\frac{m}{\sin^{-1} m}\right)^2, \quad (62)$$

and

$$F_\theta = \frac{\mu_e}{\mu_w}, \quad (63)$$

were first proposed by Wilson (1949). Use of Eq. (63) for flow with heat transfer was later recommended by Van Driest (1955) and is sometimes referred to as Van Driest II. For adiabatic flow, given M_e and r (and hence F_f and F_θ), and given also Re_θ , the surface friction is determined by computing Re_θ^i from Eq. (61) by looking up the associated value for C_f^i , using some convenient low-speed friction law; and finally by computing C_f from Eq. (60). That is,

$$C_f = \frac{1}{F_f} C_f^i \left(Re_\theta^i\right) = \frac{1}{F_f} C_f^i \left(F_\theta Re_\theta\right). \quad (64)$$

A "convenient low-speed friction law" is implicit in the survey by Coles (1968), who recommends the value $\Pi = 0.62$ for flow at constant pressure when $Re_\theta^i > 5000$. For lower Reynolds numbers, we multiply $\Pi(\delta u_\tau/\nu)$ from Table 2 of Coles (1962, Appendix A) by $0.62/0.55$. With $\delta u_\tau/\nu$ as independent variable, the quantities u_e/u_τ and $C_f^i = 2 \left(u_\tau/u_e\right)^2$ follow immediately from the local friction law (21) above. Finally, we compute $Re_{\delta^*}^i$ and Re_θ^i from Eqs. (7) and (8) of Coles (1968), after replacing Re_{δ^*} by $Re_{\delta^*} - 65$ to take account of the real profile in the sublayer. The

result of these calculations is recorded in Table 4.

Values calculated for C_f from Eq. (64), using interpolation in Table 4 to define the function $C_f^1(Re_\rho^1)$, are included in Table 3.

V. Discussion and Conclusions

According to Table 3, five different methods have been used to measure or to estimate the local friction coefficient C_f for the present experiments. Three of these methods (Van Driest scaling, Preston tube, friction-law scaling) depend on some empirical means for taking account of compressibility. In particular, the friction-law scaling of Section IV-C replaces the measured Re_ρ by Re_ρ^1 and the measured or estimated C_f by C_f^1 . When the data of Table 3 are subjected to this same scaling, they appear as shown in Fig. 13. The solid curves represent low-speed experience according to Table 4. Any discrepancy between the data and the solid curves should not be interpreted as error, because the friction-law scaling itself would then have to be viewed as error-free. This scaling is in fact of uncertain accuracy, and is used primarily to remove most of the effects of Mach number in the data, so that one technique for evaluating C_f can be readily compared with another. The required displacements from (C_f, Re_ρ) to (C_f^1, Re_ρ^1) are indicated by the line segments next to the lowest curve in Fig. 13. These displacements are not very substantial, because the Mach numbers for the present experiments are relatively low.

We consider the floating-element friction data to be the most reliable data in the figure. For the estimates of C_f from dP/dx , the scatter is large, as expected. The largest scatter, however, is in the Preston-tube data, indicating that this technique needs further development.

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Of the two Preston-tube correlations, the one by Bradshaw and Unsworth (as revised by Allen; see Section IV B) underestimates C_f slightly, especially at $M_e = 2.2$. The correlation by Hopkins and Keener is satisfactory except at $M_e = 2.2$, where it overestimates C_f by a large amount. The profile fit gives values for C_f which are systematically a little high (except for the CIT measurements), with a maximum discrepancy of about 6 percent at $M_e = 2.2$.

In general, scaling of the measured mean-velocity profiles according to the Van Driest version of the mixing-length theory (Eq. (18)) seems to be quite successful. The scaled profiles can be well represented by conventional low-speed wall-wake similarity laws. Except for discontinuities in slope at the edge of the boundary layer, the inferred profiles for v/u and τ/τ_w provide a quite acceptable standard for interpretation of the LDV measurements reported in Part II of this work. Estimates for v/u and τ/τ_w based on the assumption of similarity in y/δ or y/θ are less satisfactory.

References

1. Abbiss, J. B. 1976 Development of photon correlation anemometry for application to supersonic flow. AGARD Conf. Proc. CP 193, "Applications of Non-intrusive Instrumentation in Fluid Flow Research," Paper 11.
2. Allen, J. M. 1973 Evaluation of compressible-flow Preston tube calibrations. NASA TN D-7190; see also AIAA J. 11, 1461-1462, 1973.
3. Allen, J. M. 1977 Re-evaluation of compressible-flow Preston tube calibrations. NASA TM X-3488.
4. Bradshaw, P. and Unsworth, K. 1974 Comment on "Evaluation of Preston tube calibration equations in supersonic flow," with Reply by J. M. Allen. AIAA J. 12, 1293-1296.
5. Bushnell, D. M. and Morris, D. J. 1971 Shear-stress, eddy-viscosity, and mixing-length distributions in hypersonic turbulent boundary layers. NASA TM X-2310.
6. Coles, D. 1953 Measurements in the boundary layer on a smooth flat plate in supersonic flow. Instrumentation and experimental techniques at the Jet Propulsion Laboratory. JPL Rep. No. 20-70.
7. Coles, D. 1962 The turbulent boundary layer in a compressible fluid. Rand Corp. Rep. R-403-PR.
8. Coles, D. 1968 The young person's guide to the data. Proc. 1968 AFOSR-IFP-Stanford Conf., "Computation of Turbulent Boundary Layers," Vol. 11 (D. Coles and E. Hirst, eds.), 1-45.

9. Danberg, J. E. 1971 A re-evaluation of zero pressure gradient compressible turbulent boundary layer measurements. AGARD Conf. Proc. CP-93, "Turbulent Shear Flows," Paper 1; also BRL Rep. No. 1642, 1973.
10. Fenter, F. W. and Stalmach, C. J., Jr. 1957 The measurement of local turbulent skin friction at supersonic speeds by means of surface impact pressure probes. Univ. Texas, Austin, Rep. DRL-392 (CM-878); see also J. Aero/Space Sci. 25, 793-794, 1958.
11. Fernholz, H. H. 1976 Compressible turbulent boundary layers. In VKI Lecture Series 86, "Compressible Turbulent Boundary Layers," Vol. I.
12. Fernholz, H. H. and Finley, P. J. 1977 A critical compilation of compressible turbulent boundary layer data. AGARDograph No. 223.
13. Horstman, C. C. and Owen, F. K. 1972 Turbulent properties of a compressible boundary layer. AIAA J. 10, 1418-1424.
14. Hopkins, E. J. and Keener, E. R. 1966 Study of surface Pitots for measuring turbulent skin friction at supersonic Mach numbers--adiabatic wall. NASA TN D-3478.
15. Johnson, D. A. and Rose, W. C. 1973 Measurement of turbulence transport properties in a supersonic boundary-layer flow using laser velocimeter and hot-wire anemometer techniques. AIAA Paper 73-1045; see also AIAA J. 13, 512-515, 1975.
16. Klebanoff, P. S. 1954 Characteristics of turbulence in a boundary layer with zero pressure gradient. NACA TN 3178; also TR 1247, 1955.

17. Kleinstein, G. 1967 Generalized law of the wall and eddy-viscosity model for wall boundary layers. AIAA J. 5, 1402-1407.
18. Liepmann, H. W. and Ashkenas, H. 1947 Shock-wave oscillations in wind tunnels. J. Aeron. Sci. 14, 295-302.
19. Maise, G. and McDonald, H. 1968 Mixing length and kinematic eddy viscosity in a compressible turbulent boundary layer. AIAA J. 6, 73-80.
20. Meier, H. U. and Rotta, J. C. 1970 Experimental and theoretical investigations of temperature distributions in supersonic boundary layers. AIAA Paper 70-744; also AIAA J. 11, 2149-2156, 1971.
21. Michel, R., Quemart, C., and Elena, M. 1969 Distributions de vitesses des couches limites turbulentes en écoulement compressible, uniforme ou accéléré. La Recherche Aéronautique, No. 128, 33-47.
22. Moore, D. R. and Harkness, J. 1964 Experimental investigation of the compressible turbulent boundary layer at very high Reynolds numbers, AIAA Paper 64-592; also AIAA J. 3, 631-638, 1965.
23. Morkovin, M. V. 1961 Effects of compressibility on turbulent flows. Proc. Colloq. "Mécanique de la turbulence," CNRS (1962), 367-380 (Proc. reprinted as "Mechanics of Turbulence," Gordon and Breach, 1964).
24. Patel, V. C. 1965 Calibration of the Preston tube and limitations on its use in pressure gradients. J. Fluid Mech. 23, 185-208.
25. Rotta, J. C. 1960 Turbulent boundary layers with heat transfer in compressible flow. AGARD Rep. 281.

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OF POOR QUALITY

26. Sandborn, V. A. 1974 A review of turbulence measurements in compressible flow. NASA TM X-62337.
27. Sommer, S. C. and Short, B. J. 1955 Free-flight measurements of turbulent boundary-layer skin friction in the presence of severe aerodynamic heating at Mach numbers from 2.8 to 7.0. NACA TN 3391; see also J. Aeron. Sci. 23, 536-542, 1956.
28. Spalding, D. B. 1961 A single formula for the "law of the wall". Trans. ASME 28E (J. Appl. Mech.), 455-457.
29. Spalding, D. B. and Chi, S. W. 1964 The drag of a compressible turbulent boundary layer on a smooth flat plate with and without heat transfer. J. Fluid Mech. 18, 117-143.
30. Squire, L. C. 1971 Eddy viscosity distributions in compressible turbulent boundary layers with injection. Aeron. Quart. 22, 169-182.
31. Sturek, W. B. 1973 Calculations of turbulent shear stress in supersonic turbulent boundary layer zero and adverse pressure gradient flow. AIAA Paper 73-166.
32. Van Driest, E. R. 1951 Turbulent boundary layer in compressible fluids. J. Aeron. Sci. 18, 145-160, 216.
33. Van Driest, E. R. 1955 The turbulent boundary layer with variable Prandtl number. "50 Jahre Grenzschichtforschung" (H. Görtler and W. Tollmien, eds.), Vieweg, Braunschweig, 257-271; see also The problem of aerodynamic heating, Aeron. Eng. Rev., Oct. 1956, 26-41.

34. Wieghardt, K. 1943 Über die Wandschubspannung in turbulenten Reibungsschichten bei veränderlichem Aussendruck. KWI, Göttingen, U & M 6605; see also K. Wieghardt and W. Tillmann, "Zur turbulenten Reibungsschicht bei Druckanstieg," KWI, Göttingen, U & M 6617, 1944 (translated as "On the turbulent friction layer for rising pressure," NACA TM 1314, 1951).
35. Wilson, R. E. 1949 Turbulent boundary-layer characteristics at supersonic speeds - theory and experiment. Univ. Texas, Austin, Rep. DRL-221 (CM-569); see also J. Aeron. Sci. 17, 585-594, 1950.
36. Winter, K. G. and Gaudet, L. 1970 Turbulent boundary-layer studies at high Reynolds numbers at Mach numbers between 0.2 and 2.8. ARC R & M 3712 (1973).
37. Yanta, W. J. and Lee, R. E. 1974 Determination of turbulence transport properties with the laser Doppler velocimeter and conventional time-averaged mean flow measurements at Mach 3. AIAA Paper 74-575; see also AIAA J. 14, 725-729, 1976.

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Station	Location (cm from floating- element balance)	Pitot Tube	Preston Tube	Balance	LDV
JPL-1	-48.4	x			
JPL-2	-26.2	x	x		x
JPL-3	- 7.6	x			
JPL-4	0.0	x	x	x	x
JPL-5	7.6	x			

Table 1. High-Speed Flow Measurements
JPL 20-Inch Wind Tunnel

Station	Location (cm from leading edge)	Pitot Tube	Pitot Rake	Preston Tube	LDV
CIT-1	30.4		x	x	
CIT-2	60.9		x	x	
CIT-3	91.4		x	x	
CIT-4	152.4	x		x	
CIT-5	167.6	x		x	
CIT-6	182.8	x		x	x
CIT-7	198.1	x		x	
CIT-8	213.3	x		x	
CIT-9	228.6	x		x	

Table 2. Low-Speed Flow Measurements
CIT Merrill Wind Tunnel

TABLE 3.
SKIN FRICTION SUMMARY

STATION	ME	RE-THETA	[2*010X	FIT	CF		
					PRESTON (H/K)	PRESTON (B/U)	BALANCE COMPUTED
CIT-1	.1050	1029.			.004057	.003911	.004410
CIT-2	.1050	1875.			.003458	.003331	.003703
CIT-3	.1050	2798.			.003087	.002982	.003321
CIT-4	.1058	5932.		.002787	.002630	.002715	.002826
CIT-5	.1072	6209.		.002786	.002553	.002637	.002808
CIT-6	.1031	6604.	.002768	.002756	.002683	.002772	.002782
CIT-7	.1036	7270.		.002689	.002736	.002825	.002739
CIT-8	.1052	7475.		.002689	.002611	.002700	.002725
CIT-9	.1070	8068.		.002676	.002493	.002575	.002687
JPL-1	.5927	18870.		.002179			.002249
JPL-2	.5927	20180.		.002201	.002173	.002169	.002227
JPL-3	.5986	22190.		.002196			.002194
JPL-4	.6018	22400.	.002096	.002198	.002109	.002106	.002165
JPL-5	.5962	22300.		.002195			.002192
JPL-1	.5973	31460.		.002090			.002072
JPL-2	.5964	34330.		.002057	.002012	.002115	.002048
JPL-3	.5952	37280.		.002056			.002025
JPL-4	.5931	36470.	.001992	.002065	.001983	.001985	.002032
JPL-5	.5935	37930.		.002041			.002020
JPL-1	.7958	19770.		.002136			.002177
JPL-2	.7882	21850.		.002109	.002139	.002090	.002148
JPL-3	.8049	23540.		.002132			.002117
JPL-4	.8016	23710.	.002042	.002120	.002066	.002127	.002116
JPL-5	.7995	24570.		.002105			.002103
JPL-1	.7980	33940.		.002005			.001998
JPL-2	.7943	37360.		.001993	.001971	.001935	.001974
JPL-3	.7940	40190.		.001987			.001953
JPL-4	.7921	41090.	.001942	.001978	.001920	.001884	.001947
JPL-5	.7919	42600.		.001953			.001936

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TABLE 3. (CONT.)

STATION	ME	RE-THETA	FIT	CF		
				PRESTON (H/K)	PRESTON (R/U)	BALANCE COMPUTED
JPL-1	.9664	18650.	.002108			.002144
JPL-2	.9669	20890.	.002065	.002118	.002024	.002103
JPL-3	.9719	22720.	.002097			.002076
JPL-4	.9672	22840.	.002081	.002081	.002008	.002076
JPL-5	.9651	23850.	.002067			.002062
JPL-1	.9648	32330.	.001970			.001963
JPL-2	.9676	36250.	.001940	.001932	.001863	.001930
JPL-3	.9613	38500.	.001953			.001915
JPL-4	.9637	39900.	.001925	.001870	.001810	.001905
JPL-5	.9606	41550.	.001911			.001894
JPL-2	1.3141	19780.	.002000	.001906	.001793	.001994
JPL-3	1.3215	21880.	.001983			.001958
JPL-4	1.3197	21900.	.001983	.001913	.001808	.001958
JPL-5	1.3151	24190.	.001959			.001931
JPL-2	1.3082	37230.	.001844	.001778	.001701	.001802
JPL-3	1.3173	37550.	.001858			.001795
JPL-4	1.3125	37900.	.001860	.001802	.001697	.001795
JPL-5	1.3130	40210.	.001832			.001782
JPL-2	2.1722	23070.	.001656	.001740	.001478	.001607
JPL-3	2.1666	23520.	.001649			.001603
JPL-4	2.1642	24690.	.001633	.001683	.001497	.001590
JPL-5	2.1722	25060.	.001624			.001583
JPL-2	2.1812	38050.	.001534	.001613	.001385	.001476
JPL-3	2.1737	40570.	.001530			.001462
JPL-4	2.1820	41600.	.001527	.001573	.001378	.001454
JPL-5	2.1797	43060.	.001507			.001447

Table 4.

LOW-SPEED FRICTION LAW

DELTA-PLUS	PI	UE/UT	CF	RE-DSIAR	RE-THEA
240.	.000	18.37	.005928	450.	430.
300.	.135	19.57	.005221	896.	607.
400.	.259	20.88	.004588	1294.	896.
500.	.338	21.81	.004206	1697.	1189.
600.	.406	22.58	.003922	2122.	1498.
800.	.485	23.67	.003570	2962.	2114.
1000.	.541	24.49	.003335	3824.	2749.
1500.	.598	25.75	.003016	5910.	4308.
2000.	.620	26.56	.002834	7967.	5865.
3000.	.620	27.55	.002635	11920.	8908.
4000.	.620	28.25	.002505	15870.	11980.
5000.	.620	28.80	.002412	19820.	15060.
6000.	.620	29.24	.002339	23770.	18160.
8000.	.620	29.94	.002230	31680.	24380.
10000.	.620	30.49	.002152	39580.	30640.
15000.	.620	31.48	.002018	59330.	46380.
20000.	.620	32.18	.001931	79090.	62210.
30000.	.620	33.17	.001818	118600.	94070.

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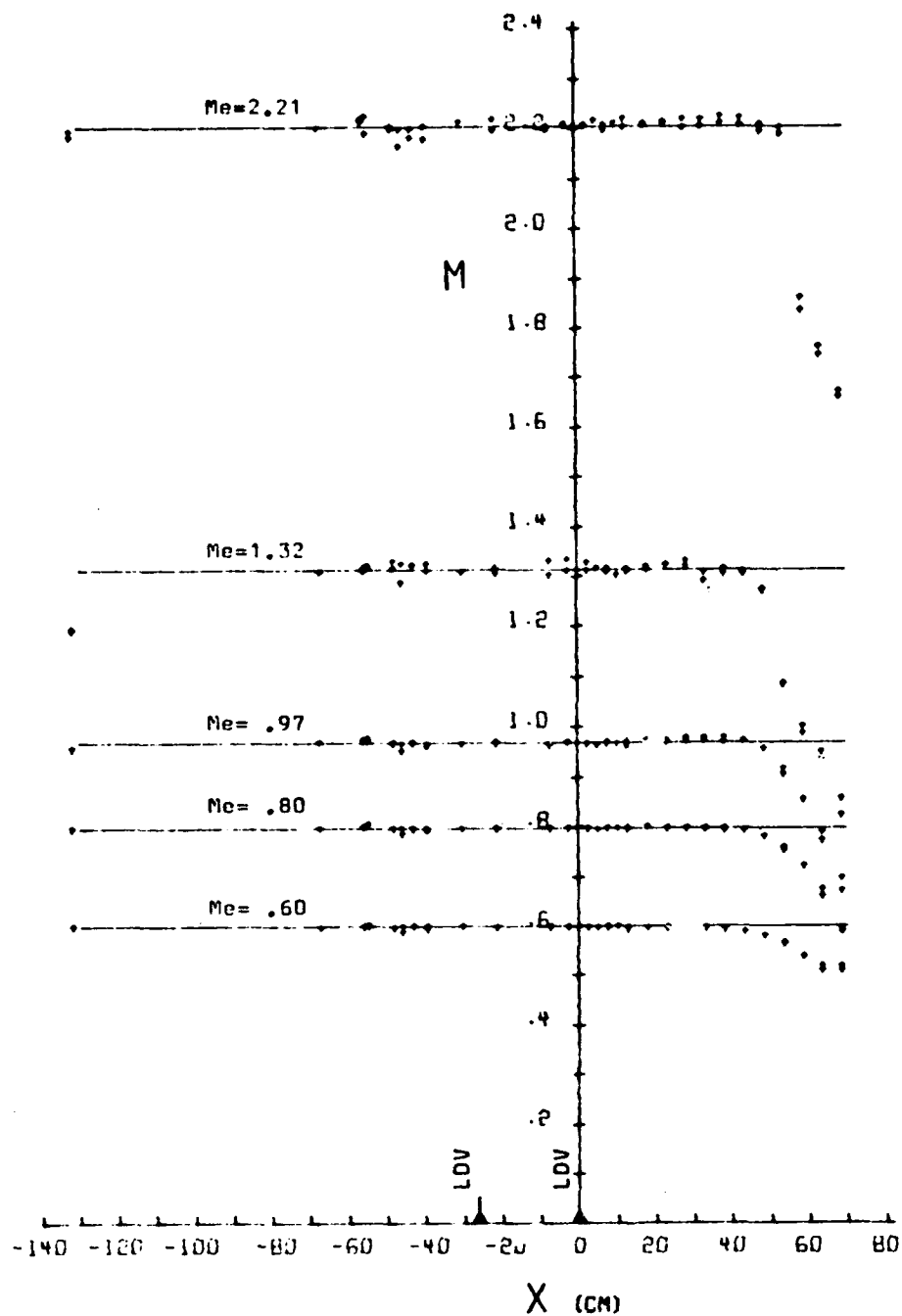


Figure 1. Free-stream Mach-Number Distribution, $Re_\rho=40,000$.
JPL 20-inch Wind Tunnel

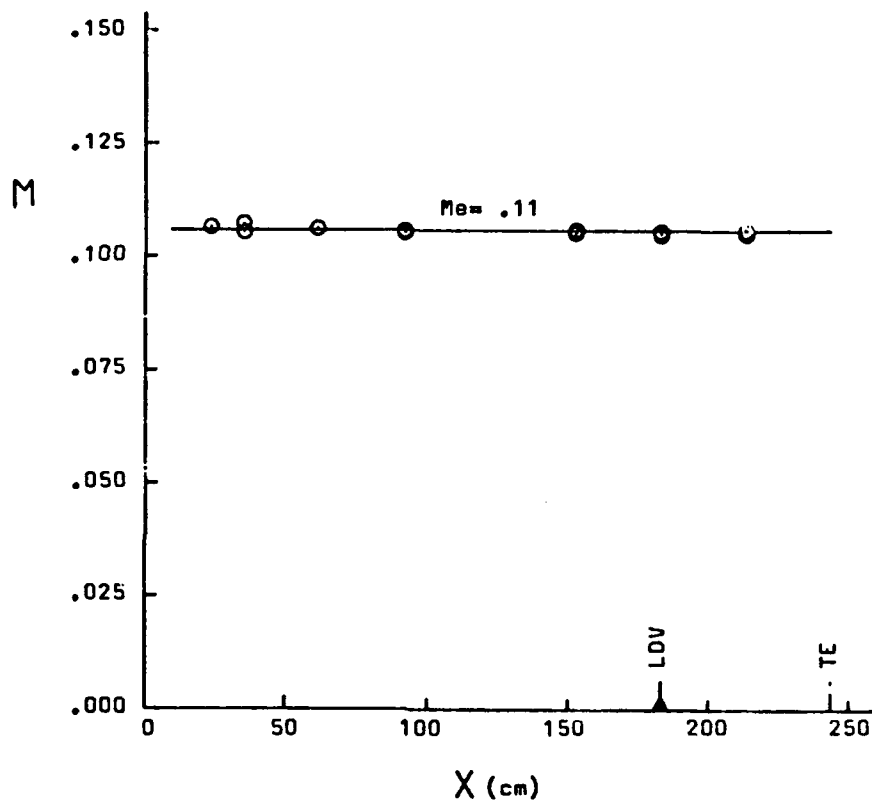


Figure 2. Free-stream Mach Number Distribution.
CIT Merrill Wind Tunnel

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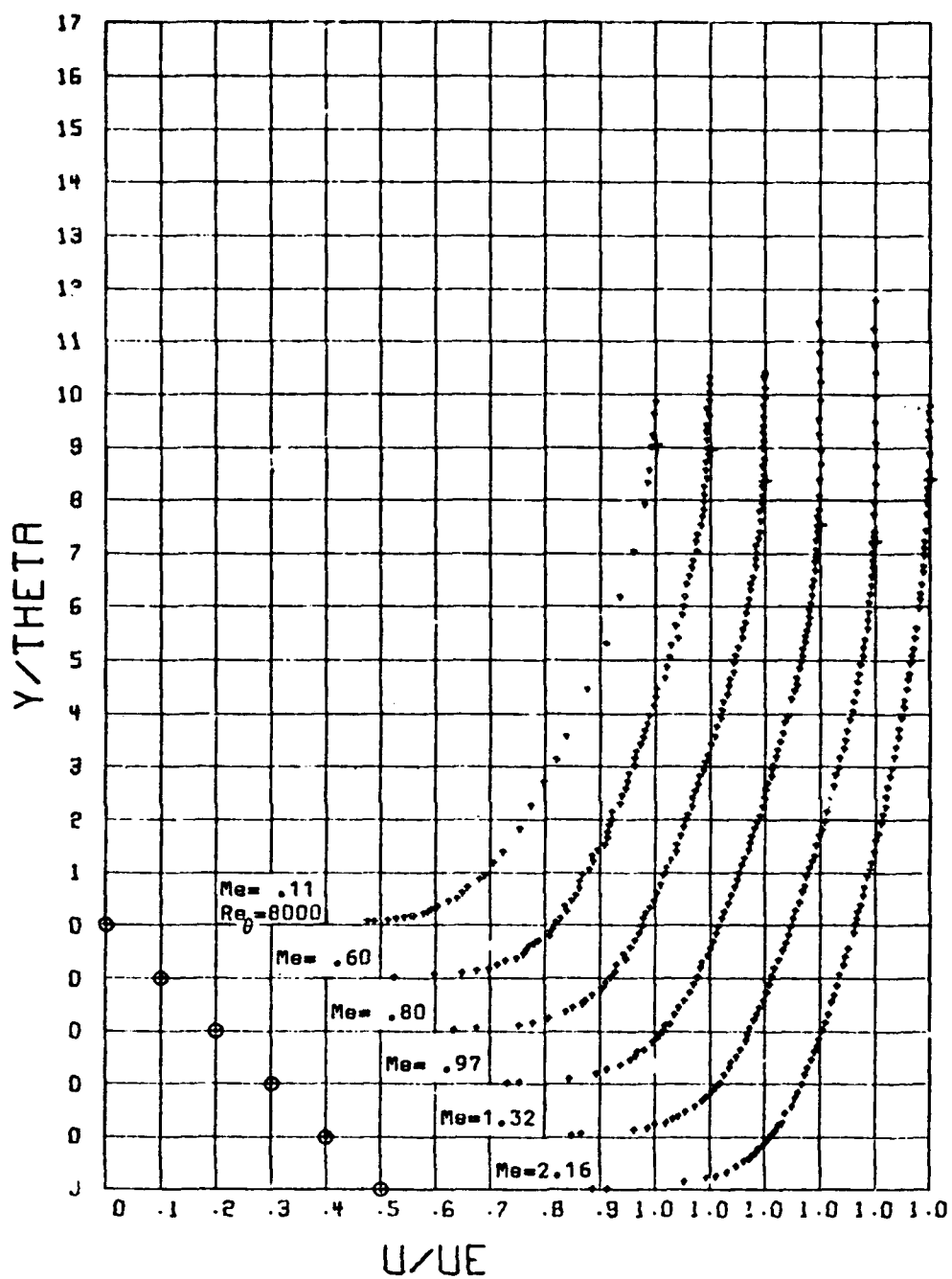
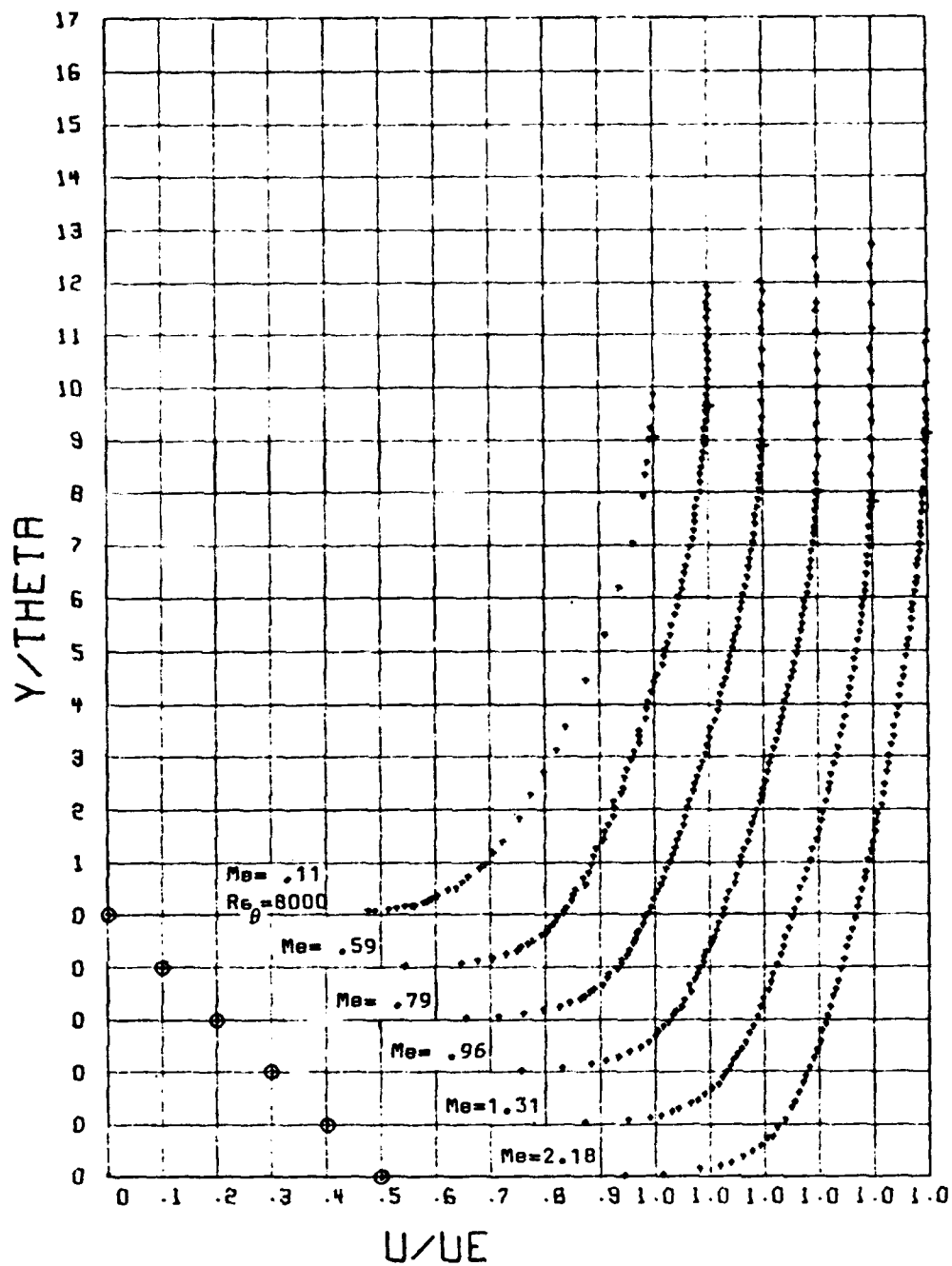


Figure 3. Mean Velocity Profiles. $Re_{\theta} = 23,000$

Figure 4. Mean Velocity Profiles. $Re_\theta = 40,000$

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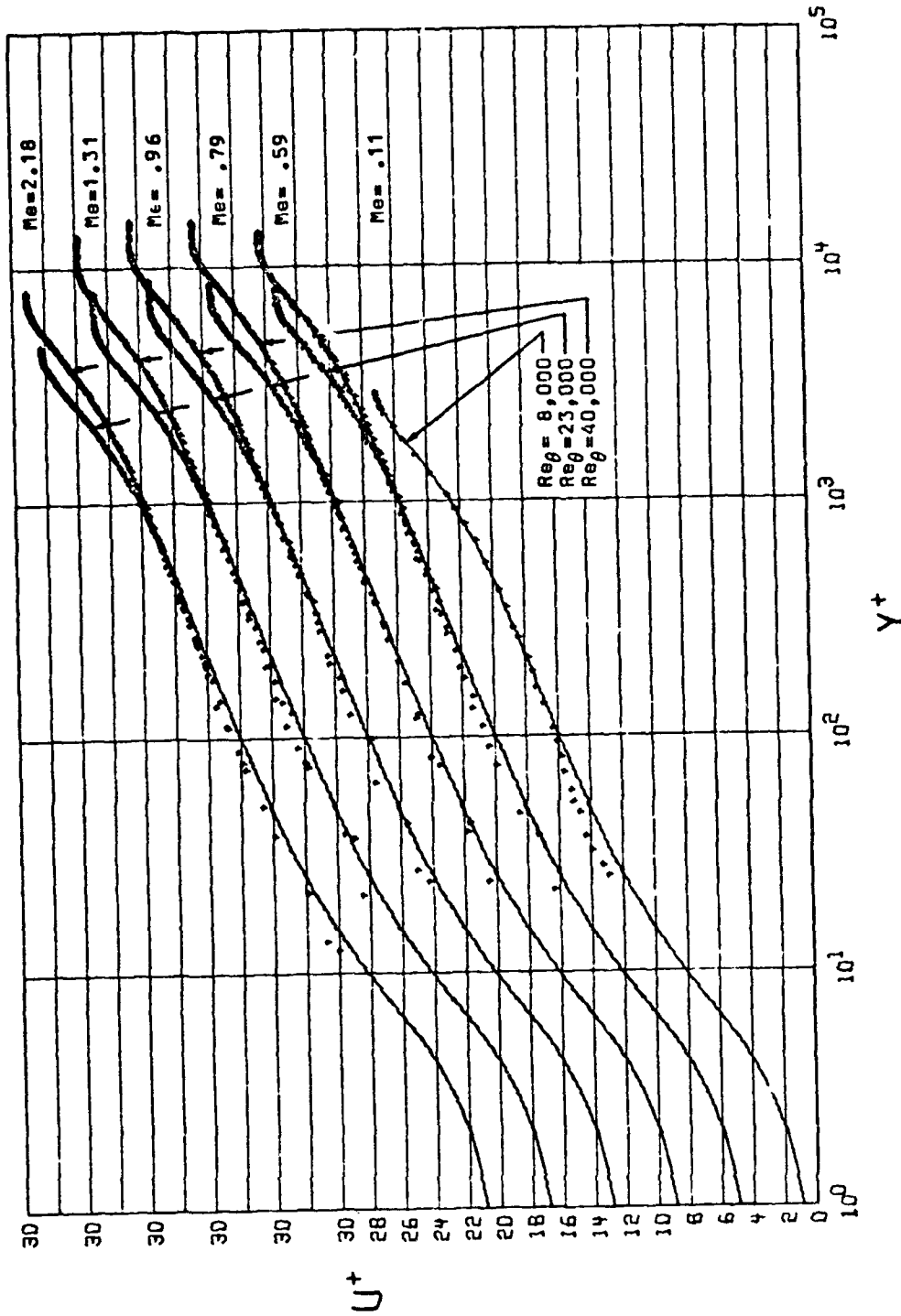


Figure 5. Mean Velocity Profiles with Van Driest Scaling.

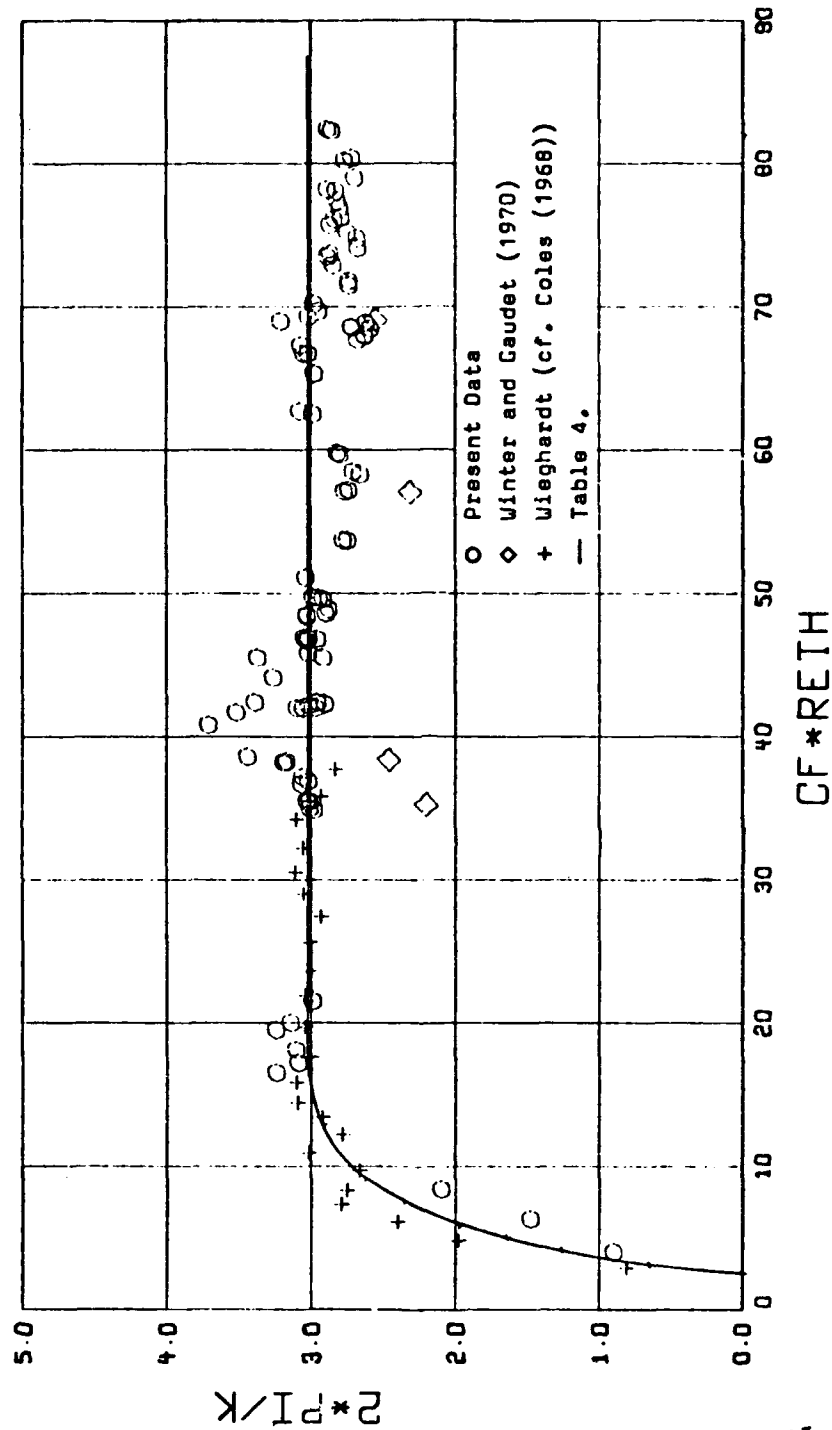


Figure 6. The Magnitude of the Wake Component with Van Driest Scaling.

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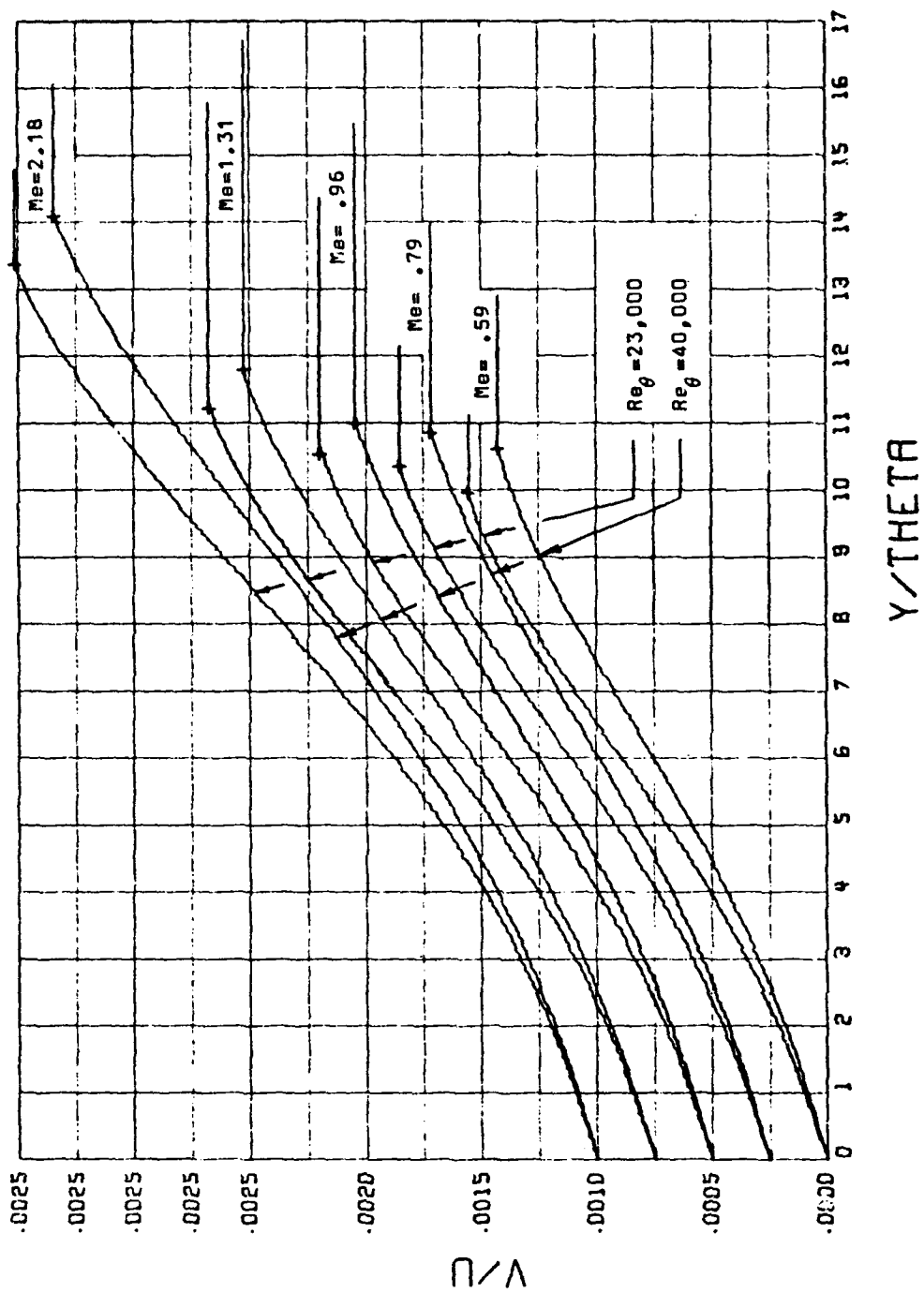


Figure 7. Distribution of Normal Velocity
According to Equation (38).

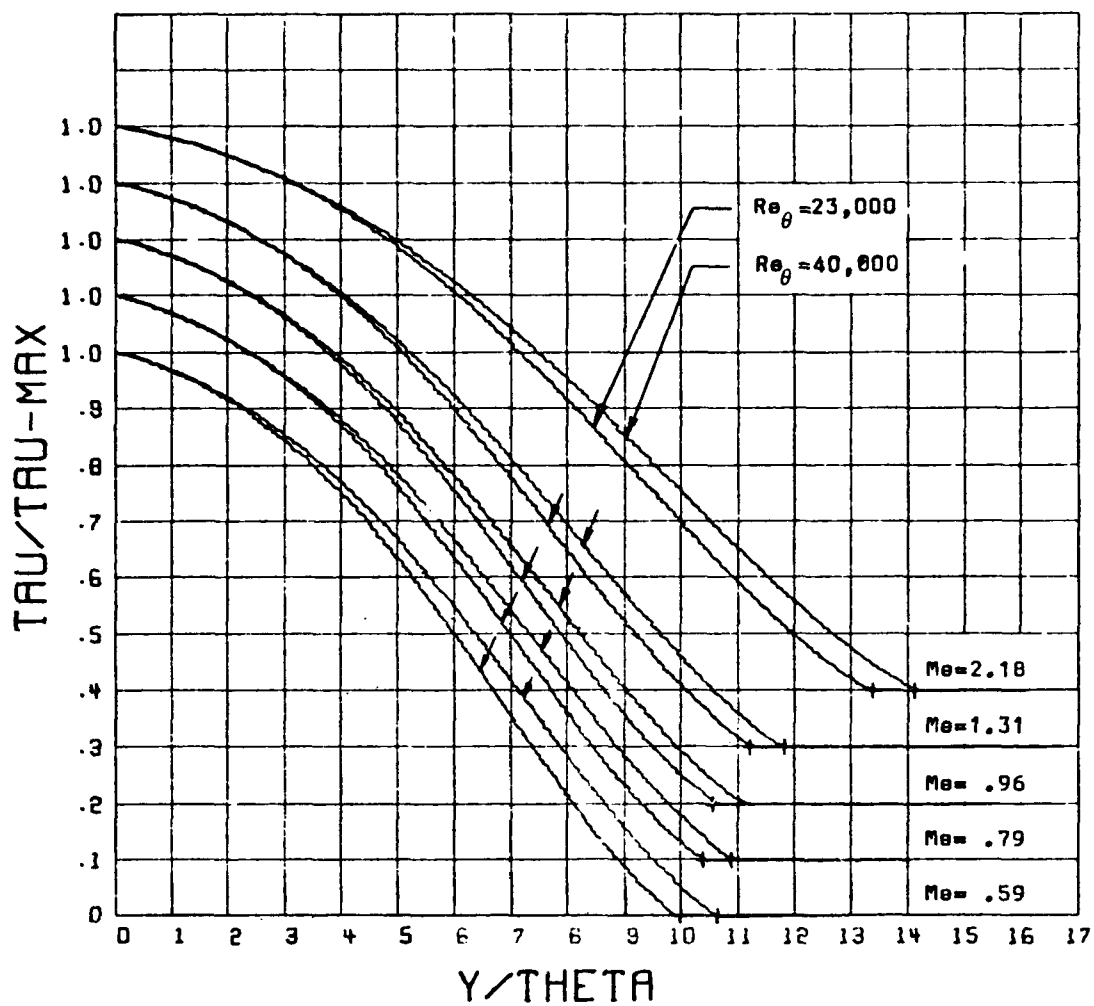


Figure 8. Distribution of Shearing Stress
According to Equation (37).

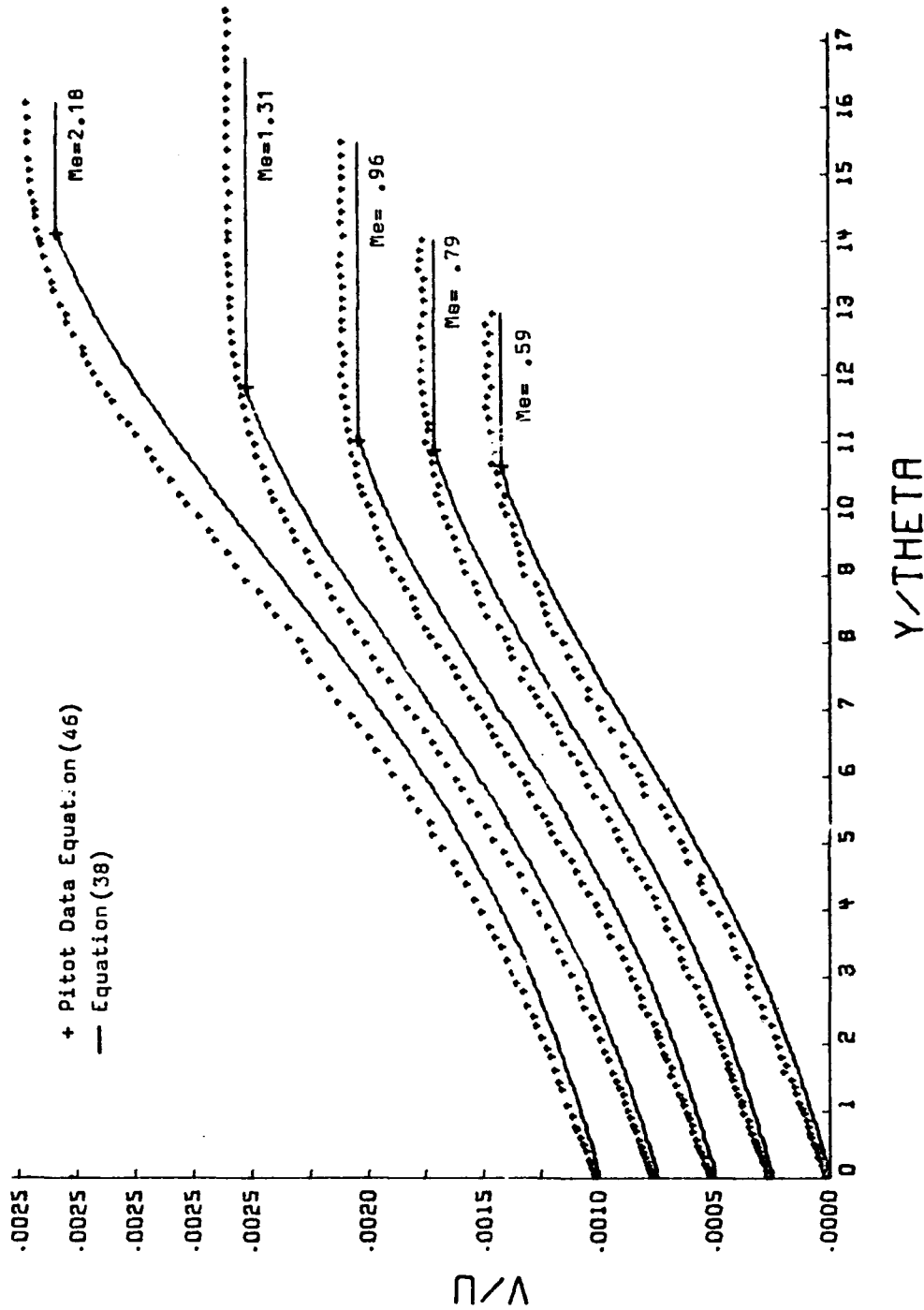


Figure 9. Comparison Between Direct Integration of Pitot Data and Integration Using the Fitted Profile. $Re_\theta = 40,000$

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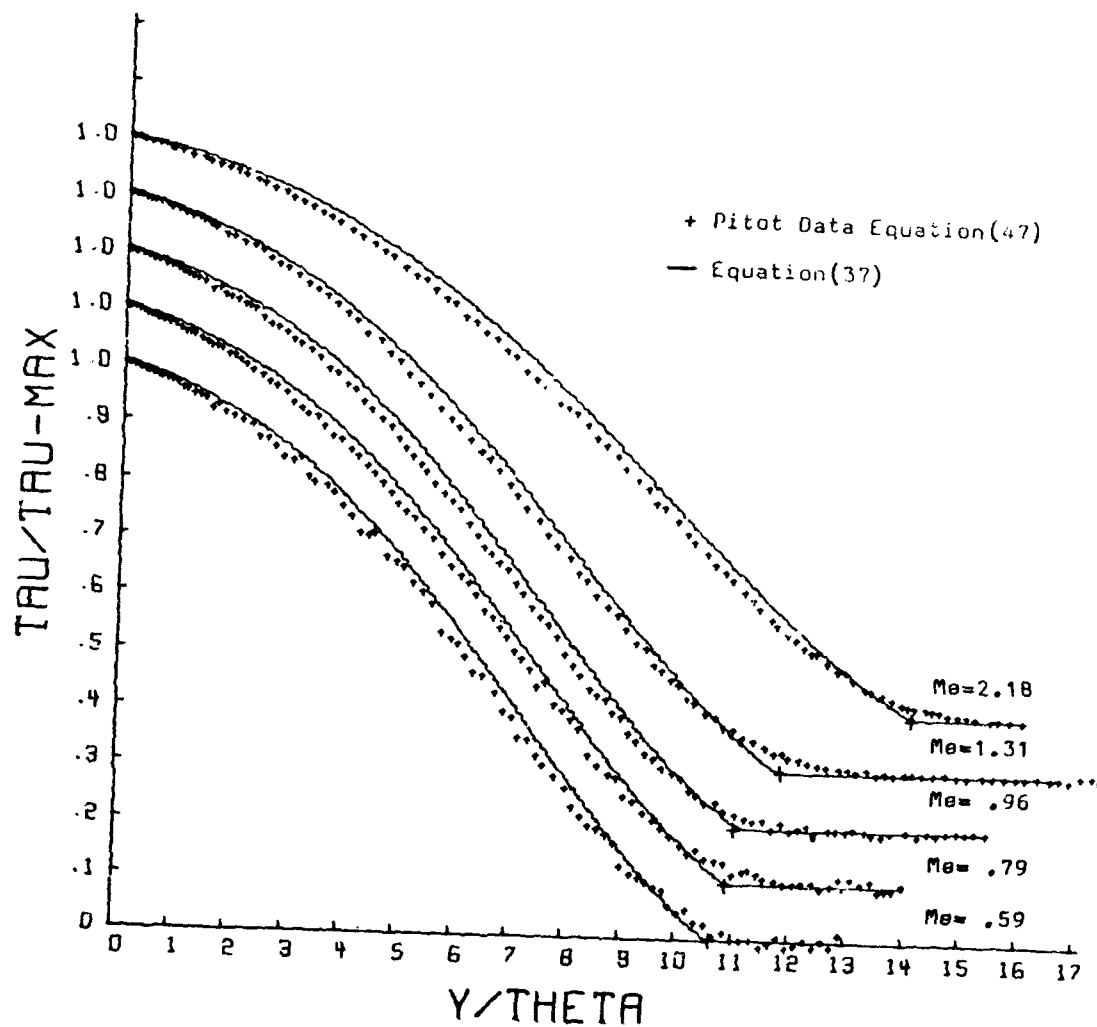


Figure 10. Comparison Between Direct Integration of Pitot Data and Integration Using the Fitted Profile.
 $Re_\theta = 40,000$

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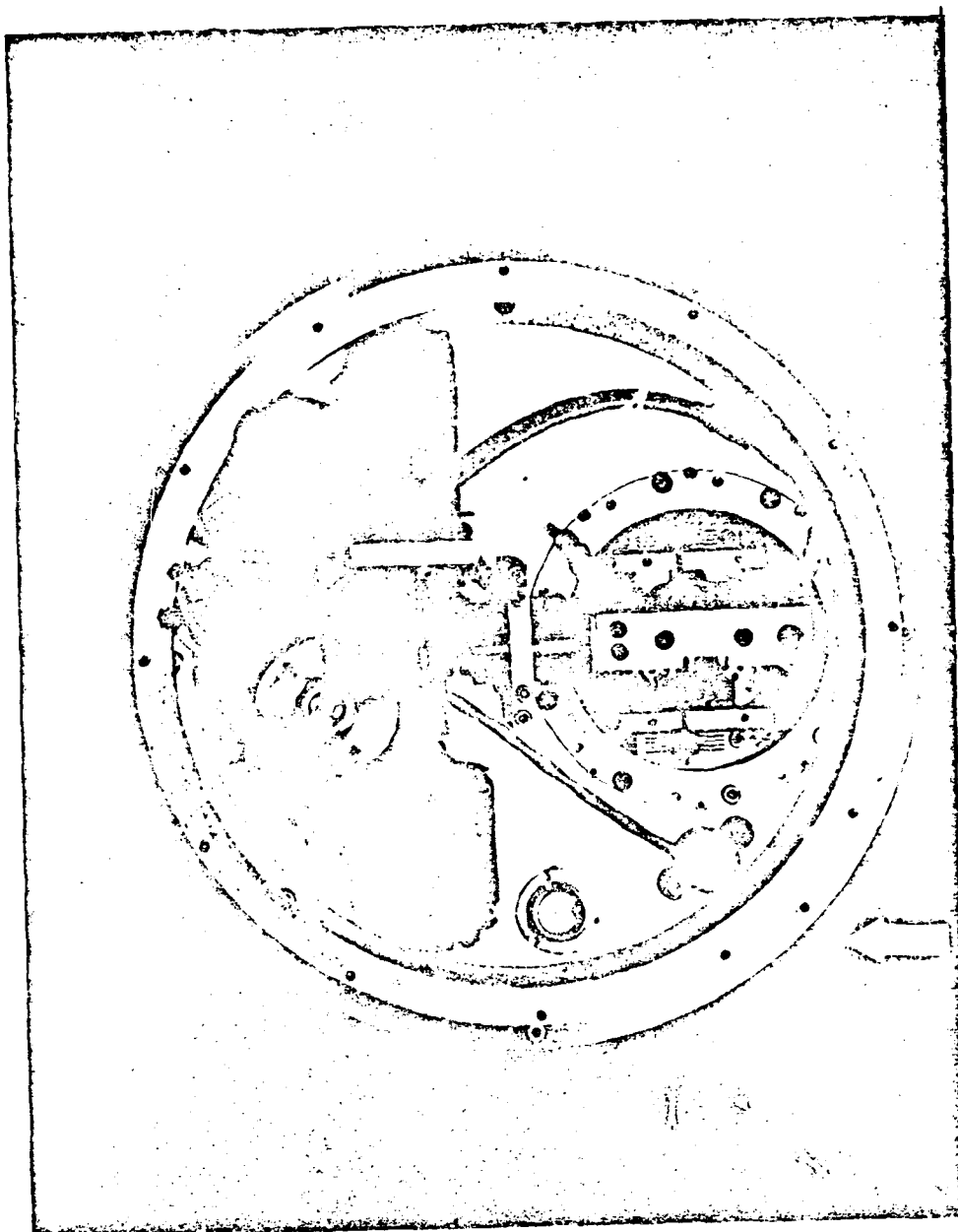


Figure 11. Floating-Element Balance.

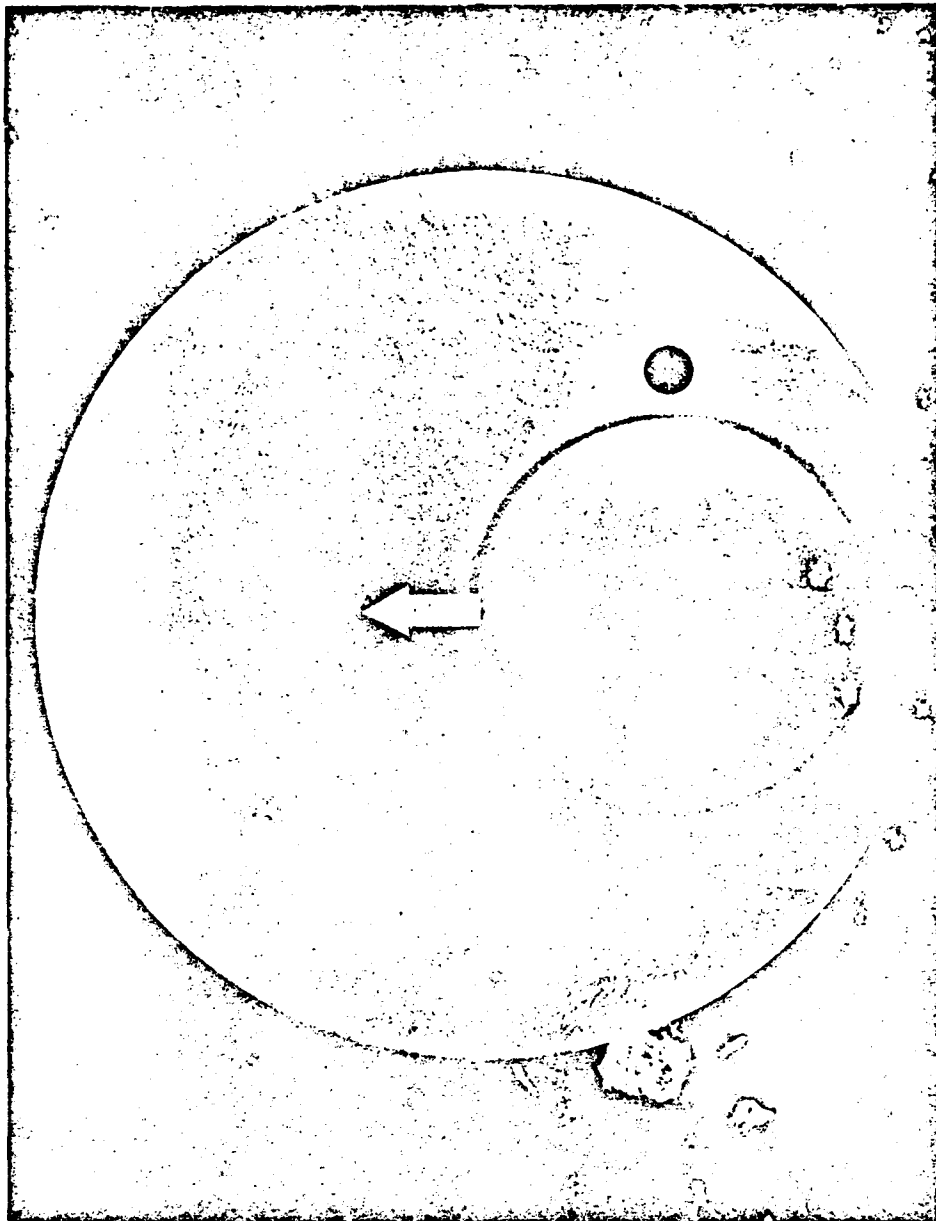


Figure 12. Floating-Element Balance.

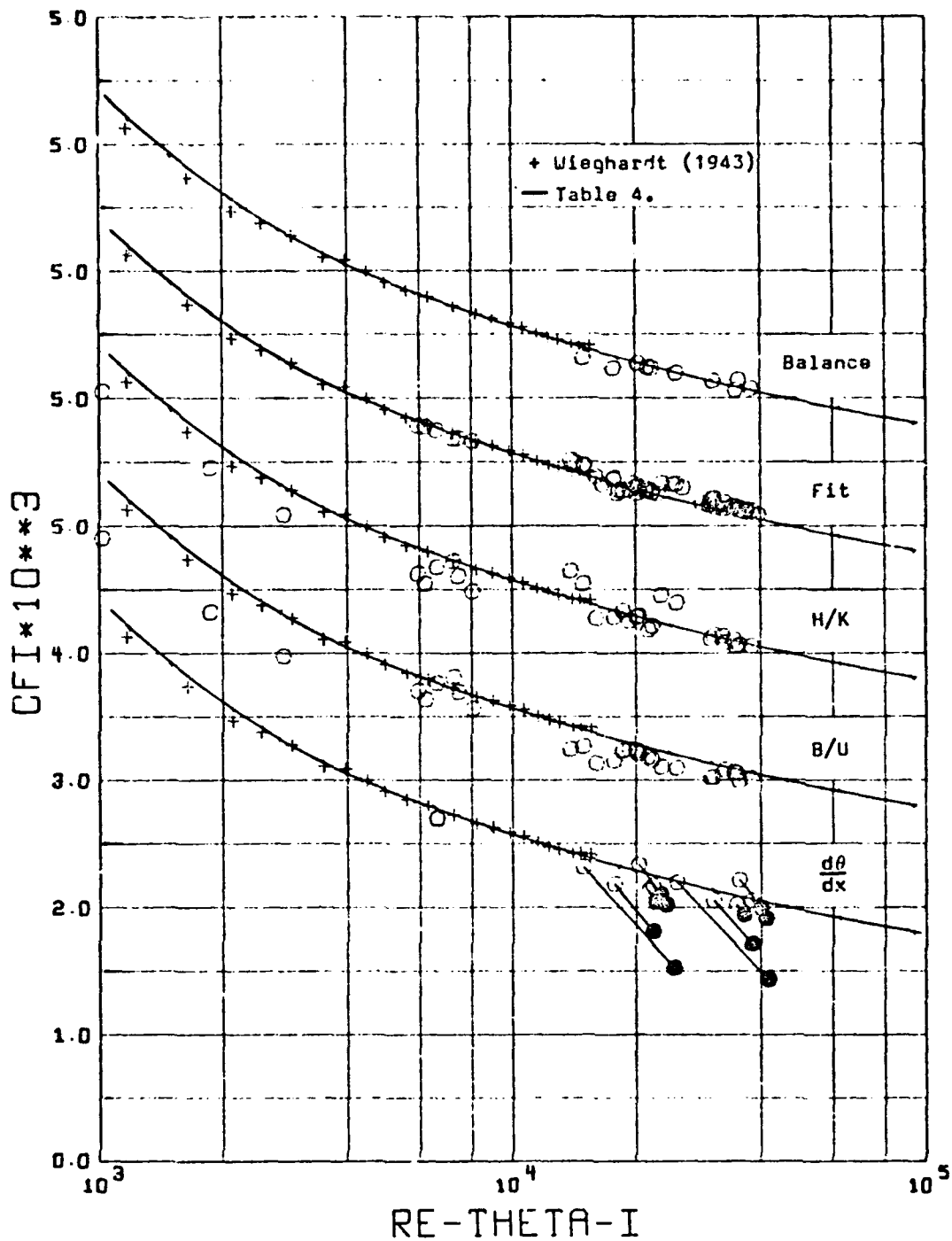


Figure 13. The Surface Friction as a Function of Reynolds Number.

AppendixTabulation of Experimental DataTable A1

Table A1 summarizes various parameters for the profiles obtained from Pitot-tube surveys at the stations listed in Tables 1 and 2 of the main text. The quantities u_r , Π , and δ are derived from the least-squares fit of each profile to the wall-wake formula,

$$\frac{u^*}{u_r} = \frac{1}{\kappa} \ln \frac{yu_r}{v_w} + c + 2 \frac{\Pi}{\kappa} \sin^2 \left(\frac{\pi y}{2 \delta} \right) , \quad (19)$$

where u^* is velocity scaled according to Van Driest,

$$u^* = \int_0^u \left(\frac{\rho}{\rho_w} \right)^{1/2} du . \quad (11)$$

The two integral thicknesses δ^* and θ are defined by

$$\delta^* = \int_0^\delta \left(1 - \frac{\rho u}{\rho_e u_e} \right) dy , \quad (4)$$

and by

$$\theta = \int_0^\delta \frac{\rho u}{\rho_e u_e} \left(1 - \frac{u}{u_e} \right) dy . \quad (5)$$

The quantity H is the ratio δ^*/θ .

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Table A2

Table A2 contains Preston-tube data, including probe diameter D , pressure coefficient

$$C_p = 2 \frac{(p_p - p_s)}{\gamma p_s M_e^2} \quad (59)$$

as friction coefficient, as inferred by two different correlation methods.

The method of Hopkins and Keener (1966), denoted by H/K, uses the formula

$$f_2(T') Re_D^2 \left(\frac{M_p}{M_e} \right)^2 = 32.885 \left[f_2(T') Re_D^2 C_f \right]^{1.132} \quad (53)$$

which is explicitly soluble for C_f . The quantity M_p is the Mach number implied by C_p , and the quantities Re_D and $f_2(T')$ are defined by Eqs. (52) and (54) of the main text. The method of Bradshaw and Unsworth (1974) as revised by Allen (1977), denoted by B/U, uses the formula

$$\begin{aligned} \frac{C_p}{C_f} = & 96 + 60 \log_{10} \left(\frac{D^+}{50} \right) + 23.7 \left[\log_{10} \left(\frac{D^+}{50} \right) \right]^2 \\ & + 10^4 M_T^2 \left[(D^+)^{0.30} - 2.38 \right] \quad (57) \end{aligned}$$

This formula is soluble for C_f only by iteration, since the quantities D^+ and M_T both depend on C_f . These quantities are defined by Eqs. (56) and (58) of the main text.

Table A3

Table A3 includes estimates of the pressure-gradient parameter

$$\text{BETA} = \frac{\theta}{\gamma M_e^2} \frac{1}{P} \frac{dP}{dx} \quad , \quad (\text{A1})$$

and the momentum-thickness derivative

$$\text{DTDx} = \frac{d\theta}{dx} \quad . \quad (\text{A2})$$

These are assigned to stations CIT-6 or JPL-4 as appropriate. The quantity

$$\text{MOMB} = \frac{2}{C_f} \frac{d\theta}{dx} \quad , \quad (\text{A3})$$

where C_f is the value measured using the floating-element balance, should equal unity if the experiment is free of error.

Tables A4-A14

Tables A4-A14 and the associated Figs. A1-A44 are a detailed record of data obtained from the Pitot-tube surveys. Each table heading includes the integral properties δ^* and θ for the profile, together with the friction coefficient C_f measured using the floating-element balance, where applicable (i.e., station JPL-4). Listed next are the profile parameters u_τ , η , δ , from the profile fit, with the associated friction coefficient

$$C_f = 2 \frac{\rho_w}{\rho_e} \left(\frac{u_\tau}{u_e} \right)^2 \quad . \quad (22)$$

The range of y used in the fit is specified as Y_{MIN} , Y_{MAX} . The mean square deviation of the fitted data from the wall-wake formula is given as $CHISQR$. The variable for this calculation is the Van Driest velocity u^*/u_e .

The body of the tables lists the distance from the wall as y , as y/θ , and as

$$Y-PLUS = \frac{yu_\tau}{v_w} \quad (A4)$$

Also listed are the local Mach number M , density ρ , and velocity u (all normalized by the corresponding free-stream values), and the Van Driest velocity

$$U-PLUS = \frac{u^*}{u_\tau} \quad (A5)$$

Finally, the tables give the shearing stress τ/τ_w and the normal velocity v/u computed from

$$\frac{\tau}{\tau_w} = 1 - \left(\frac{2n - \frac{u}{u_e} P}{2Q_e - P_e} \right) \quad (37)$$

and

$$\frac{v}{u} = \frac{\tau_w}{\rho_e u_e^2} \frac{\rho_e u_e}{\rho u} \frac{P}{(2Q_e - P_e)} \quad (38)$$

where P and Q are definite integrals defined by Eqs. (44) and (45) of the main text.

Table A1.
INTEGRAL PROPERTIES OF THE BOUNDARY LAYER

STATION	MF	RF-THETA	U/F (M/SEC)	U/TAU (M/SEC)	PI	DELTA (CM)	DELTA OFF-TA-STAR (CM)	TWETA (CM)	H
CIT-4	.1058	5932.	37.25	1.392	.6642	2.402	.3572	.7683	1.331
CIT-5	.1072	6209.	38.01	1.420	.6346	2.584	.3759	.7843	1.322
CIT-6	.1031	6604.	37.34	1.387	.6374	2.454	.3860	.7924	1.320
CIT-7	.1036	7270.	35.91	1.318	.6643	3.018	.4404	.3328	1.323
CIT-8	.1052	7475.	37.42	1.373	.6453	3.149	.4545	.3439	1.321
CIT-9	.1070	8068.	37.79	1.393	.6139	3.404	.4814	.3659	1.315
JPL-1	.5927	18870.	201.05	6.840	.7613	2.482	.3794	.7604	1.457
JPL-2	.5927	20180.	202.47	6.922	.6684	2.853	.4179	.7932	1.439
JPL-3	.5986	22190.	202.13	6.907	.6224	3.044	.4333	.3028	1.420
JPL-4	.6018	22400.	204.91	7.007	.5908	3.147	.4531	.3177	1.426
JPL-5	.5962	22300.	203.19	6.941	.5944	3.264	.4552	.3201	1.422
JPL-1	.5973	31460.	205.88	6.863	.6124	2.412	.3325	.7344	1.418
JPL-2	.5964	34330.	208.25	6.886	.6124	2.748	.3803	.7689	1.414
JPL-3	.5952	37280.	205.97	6.809	.5733	2.924	.3948	.7801	1.409
JPL-4	.5931	36470.	207.02	6.857	.5509	3.054	.4039	.7876	1.404
JPL-5	.5935	37930.	207.38	6.828	.5760	3.161	.4218	.3003	1.404
JPL-1	.7958	19770.	244.47	9.115	.7221	2.305	.3655	.7238	1.562
JPL-2	.7882	21850.	243.34	9.711	.6917	2.640	.4124	.7656	1.544
JPL-3	.8049	23540.	244.29	9.180	.5994	2.880	.4221	.7748	1.535
JPL-4	.8016	23710.	247.51	9.192	.6145	2.961	.4395	.7857	1.538
JPL-5	.7995	24570.	246.60	9.125	.6243	3.053	.4564	.7964	1.539
JPL-1	.7980	33940.	271.81	9.080	.6304	2.214	.3225	.7108	1.529
JPL-2	.7943	37360.	272.19	9.040	.5901	2.553	.3610	.7393	1.514
JPL-3	.7940	40190.	270.59	8.994	.5552	2.749	.3812	.7524	1.509
JPL-4	.7921	41090.	271.52	9.002	.5579	2.860	.3979	.7637	1.508
JPL-5	.7914	42600.	271.55	8.944	.5867	2.945	.4155	.7747	1.512

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Table A1. (Cont.)

STATION	ME	RF-TMETHA	U/F (M/SEC)	ITAIL (M/SEC)	PI	DELTA (CM)	DELTA-STAR (CM)	TMFTA (CM)	H
JPL-1	.9664	18650.	313.76	10.997	.7057	2.104	.3487	.2079	1.677
JPL-2	.9669	20890.	314.63	10.916	.6968	2.430	.3983	.2385	1.670
JPL-3	.9719	22720.	314.66	11.007	.6076	2.609	.4084	.2466	1.656
JPL-4	.9672	22840.	315.09	10.974	.6222	2.696	.4228	.2556	1.653
JPL-5	.9651	23850.	314.15	10.902	.6222	2.816	.4407	.2665	1.653
JPL-1	.9648	32330.	321.78	10.901	.6331	2.015	.3113	.1898	1.639
JPL-2	.9626	36250.	322.24	10.829	.6210	2.345	.3559	.2175	1.636
JPL-3	.9613	38500.	321.05	10.822	.5501	2.551	.3667	.2273	1.613
JPL-4	.9637	39900.	322.66	10.804	.5887	2.628	.3894	.2386	1.631
JPL-5	.9606	41550.	322.04	10.738	.5925	2.750	.4076	.2505	1.627
JPL-2	1.3141	19780.	401.96	14.526	.6503	2.325	.4184	.2121	1.973
JPL-3	1.3215	21880.	402.38	14.498	.6356	2.504	.4474	.2262	1.978
JPL-4	1.3197	21900.	401.99	14.478	.6090	2.619	.4601	.2335	1.970
JPL-5	1.3151	24190.	396.85	14.197	.6205	2.713	.4777	.2433	1.963
JPL-2	1.3082	37230.	408.33	14.154	.6272	2.214	.3783	.1945	1.944
JPL-3	1.3173	37550.	409.20	14.260	.5508	2.402	.3969	.2047	1.938
JPL-4	1.3125	37900.	408.71	14.239	.5314	2.486	.4061	.2104	1.929
JPL-5	1.3130	40210.	406.36	14.052	.5630	2.566	.4242	.2189	1.937
JPL-2	2.1722	23070.	549.35	21.418	.6109	3.170	.7410	.2368	3.129
JPL-3	2.1666	23520.	550.76	21.404	.6175	3.253	.7595	.2435	3.119
JPL-4	2.1642	24690.	549.37	21.234	.6194	3.419	.7967	.2555	3.117
JPL-5	2.1722	25060.	552.35	21.325	.6275	3.489	.8137	.2601	3.127
JPL-2	2.1817	38050.	564.19	21.210	.5705	3.080	.6873	.2208	3.112
JPL-3	2.1737	40570.	560.66	21.016	.5692	3.125	.6942	.2240	3.098
JPL-4	2.1820	41600.	561.76	21.077	.5463	3.262	.7178	.2312	3.104
JPL-5	2.1797	43060.	562.73	20.963	.5751	3.381	.7507	.2415	3.107

Table A2.

PRESTON TIME DATA SUMMARY

STATION	WC	RF-TWETA	N	CD	CF(14/17)	CF(19/11)	CF(24/1)
CIT-1	.1050	1024.	.210	.540257	.004057	.003911	
CIT-2	.1050	1875.	.210	.664842	.003658	.003331	
CIT-3	.1050	2708.	.210	.407586	.003087	.002082	
CIT-4	.1058	5932.	.210	.367129	.002630	.002715	
CIT-5	.1072	6209.	.210	.353816	.002553	.002637	
CIT-6	.1031	6504.	.210	.377610	.002633	.002772	
CIT-7	.1036	7270.	.210	.382737	.002736	.002825	
CIT-8	.1052	7675.	.210	.362560	.002611	.002700	
CIT-9	.1070	8068.	.210	.365333	.002603	.002575	
JPL-2	.5927	20180.	.082	.316356	.002173	.002187	
JPL-2	.5927	20180.	.162	.379667	.002167	.002157	
JPL-2	.5927	20180.	.317	.658710	.002170	.002165	
JPL-4	.5018	22600.	.082	.303770	.002001	.002008	.002165
JPL-4	.6018	22600.	.162	.373014	.002178	.002115	
JPL-2	.5966	34330.	.082	.335341	.001982	.001902	
JPL-2	.5966	34330.	.162	.608831	.002004	.002006	
JPL-2	.5966	34330.	.162	.421421	.002056	.002053	
JPL-2	.5966	34330.	.162	.418002	.002062	.002060	
JPL-2	.5966	34330.	.317	.684368	.001970	.001960	
JPL-4	.5931	36670.	.082	.332706	.001972	.001979	.001996
JPL-4	.5931	36670.	.162	.605812	.001905	.001902	
JPL-2	.7882	21850.	.082	.328065	.002137	.002106	
JPL-2	.7882	21850.	.162	.398451	.002148	.002093	
JPL-2	.7882	21850.	.317	.677383	.002133	.002072	
JPL-4	.8016	23710.	.082	.315878	.002063	.002036	.002186
JPL-4	.8016	23710.	.162	.385220	.002070	.002010	

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Table A2. (Cont.)

STATION	ME	RE-THEFA	n	CP	CF(W/K)	CE(R/U)	CF(BAL)
JPL-2	.7943	37360.	.082	.348449	.001032	.001902	
JPL-2	.7943	37360.	.162	.425013	.001046	.001910	
JPL-2	.7943	37360.	.162	.430066	.002000	.001957	
JPL-2	.7943	37360.	.162	.435555	.001006	.001945	
JPL-2	.7943	37360.	.317	.524374	.001002	.001941	
JPL-4	.7921	41000.	.082	.344329	.001016	.001884	
JPL-4	.7921	41000.	.162	.418386	.001026	.001884	.001942
JPL-2	.9669	20890.	.082	.332483	.002108	.002037	
JPL-2	.9669	20890.	.162	.404747	.002112	.002012	
JPL-2	.9669	20890.	.317	.497931	.002135	.002026	
JPL-4	.9672	22840.	.082	.330050	.002084	.002027	
JPL-4	.9672	22840.	.162	.398954	.002078	.001900	.002057
JPL-2	.9626	36250.	.082	.350932	.001804	.001837	
JPL-2	.9626	36250.	.162	.430063	.001910	.001841	
JPL-2	.9626	36250.	.162	.450468	.001083	.001005	
JPL-2	.9626	36250.	.162	.447305	.001072	.001806	
JPL-2	.9626	36250.	.317	.520053	.001003	.001841	
JPL-4	.9637	39900.	.082	.344784	.001867	.001812	
JPL-4	.9637	39900.	.162	.420335	.001873	.001408	.001947
JPL-2	1.3141	10780.	.082	.304857	.001805	.001812	
JPL-2	1.3141	10780.	.162	.379365	.001020	.001801	
JPL-2	1.3141	10780.	.162	.379134	.001010	.001801	
JPL-2	1.3141	10780.	.162	.366049	.001072	.001743	
JPL-2	1.3141	10780.	.317	.465244	.001020	.001700	
JPL-4	1.3107	21900.	.082	.309447	.001015	.001827	
JPL-4	1.3107	21900.	.162	.378005	.001011	.001749	.001447

Table A2. (Cont.)

STATION	ME	RE-THTA	n	CP	CF(H/K)	CF(R/H)	CF(R/L)
JPL-2	1.3082	37230.	.082	.346058	.001775	.001707	
JPL-2	1.3082	37230.	.162	.431352	.001703	.001710	
JPL-2	1.3082	37230.	.162	.426238	.001776	.001696	
JPL-2	1.3082	37230.	.162	.423388	.001767	.001680	
JPL-2	1.3032	37230.	.317	.526062	.001782	.001707	
JPL-4	1.3125	37900.	.082	.347334	.001801	.001703	
JPL-4	1.3125	37900.	.162	.427147	.001806	.001692	.001748
JPL-2	2.1722	23070.	.082	.268505	.001628	.001552	
JPL-2	2.1722	23070.	.162	.322846	.001721	.001457	
JPL-2	2.1722	23070.	.162	.324205	.001716	.001453	
JPL-2	2.1722	23070.	.162	.317184	.001742	.001442	
JPL-2	2.1722	23070.	.317	.426345	.001896	.001470	
JPL-4	2.1642	24690.	.082	.265705	.001620	.001560	
JPL-4	2.1642	24690.	.162	.321750	.001747	.001455	.001532
JPL-2	2.1812	38050.	.082	.296806	.001570	.001414	
JPL-2	2.1812	38050.	.162	.368118	.001587	.001376	
JPL-2	2.1812	38050.	.162	.370214	.001581	.001378	
JPL-2	2.1812	38050.	.162	.361308	.001607	.001358	
JPL-2	2.1812	38050.	.317	.482045	.001723	.001402	
JPL-4	2.1820	41600.	.082	.293865	.001566	.001300	
JPL-4	2.1820	41600.	.162	.363573	.001583	.001350	.001465

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Table A3.

STREAM-WISE VARIATION OF FLOW PROPERTIES

ME	RE-THETA	BETA	OTDX	MOMR
.1031	6604.	.883E-05	.001384	
.6018	22400.	.651E-05	.001048	.968
.5931	36470.	.650E-05	.000996	.999
.8016	23710.	.144E-05	.001021	.979
.7921	41090.	.366E-05	.000971	1.000
.9672	22840.	-.115E-04	.001027	.998
.9637	39900.	.871E-06	.001007	1.035
1.3197	21900.	.606E-05	.000927	.993
1.3125	37900.	.666E-05	.000875	.979
2.1642	24690.	.228E-06	.000766	1.000
2.1820	41600.	-.252E-05	.000722	.999

TABLE A 4. DATA SUMMARY
PROFILE - CIT-4 - - - PITOT PRESSURE DATAEDGE MACH NO. = .1058
X = 152.40 CM
TOTAL PRESSURE = .1005E+06 N/M**2
TOTAL TEMPERATURE = 377.05 DEG-KUE = 37.25 M/SEC RE-DELTA-STAR = 7899. DELTA STAR = .3572 CM THETA = .2683 CM M = 1.331
RE-DELTA-STAR = 7899. RE-THETA = 5937. MUWALL = .1685 CM**2/SECLEAST SQUARE FIT PARAMETERS
UTAU = 1.3923 M/SEC
CHISQR = .4833E-04CF = .00787
YMAX = 2.175 CMPI = .0062
YMIN = .091 CM

DELTA = 2.4020 CM

Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHME	U/UF	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	1.0000	0.0000	0.00	1.0000	0.000000
.031	.114	26.	.4941	1.0000	.4941	13.27	1.0000	0.000000
.035	.133	79.	.5080	1.0000	.5080	13.59	.9996	.000102
.040	.150	33.	.5212	1.0000	.5212	13.94	.9992	.000004
.047	.177	39.	.5403	1.0000	.5403	14.46	.9985	.000008
.055	.207	45.	.5543	1.0000	.5543	14.83	.9977	.000013
.071	.264	58.	.5738	1.0000	.5738	15.35	.9961	.000021
.091	.330	75.	.5927	1.0000	.5927	15.84	.9938	.000030
.111	.414	91.	.6055	1.0000	.6055	16.20	.9914	.000040
.142	.532	118.	.6248	1.0000	.6248	16.72	.9873	.000054
.176	.656	145.	.6423	1.0000	.6423	17.14	.9827	.000073
.187	.698	154.	.6469	1.0000	.6469	17.84	.9810	.000078
.204	.749	170.	.6586	1.0000	.6586	17.57	.9781	.000084
.271	1.012	224.	.6782	1.0000	.6782	18.15	.9674	.000121
.350	1.307	289.	.7028	1.0000	.7028	18.80	.9526	.000164
.470	1.603	355.	.7243	1.0000	.7243	19.34	.9357	.000207
.587	2.189	485.	.7619	1.0000	.7619	20.39	.8947	.000319
.749	2.792	619.	.7944	1.0000	.7944	21.24	.8446	.000425
.906	3.378	749.	.8210	1.0000	.8230	22.02	.7944	.000522
1.045	3.970	880.	.8444	1.0000	.8444	22.86	.7444	.000643
1.222	4.554	1010.	.8760	1.0000	.8760	23.64	.6923	.000743
1.540	5.739	1272.	.9231	1.0000	.9231	24.70	.6481	.001159
1.859	6.928	1536.	.9654	1.0000	.9654	25.83	.5933	.001465
2.016	7.514	1666.	.9794	1.0000	.9794	26.20	.5427	.001601
2.175	8.106	1797.	.9837	1.0000	.9837	26.48	.4910	.001719
2.333	8.698	1928.	.9865	1.0000	.9865	26.66	.4382	.001814
2.419	9.017	1999.	.9882	1.0000	.9882	26.71	.3859	.001834
2.490	9.283	2058.	.9887	1.0000	.9887	26.73	.3333	.001834
2.573	9.591	2126.	.9981	1.0000	.9981	26.73	.2800	.001834
2.649	9.875	2189.	.9991	1.0000	.9991	26.73	.2273	.001834
2.732	10.182	2257.	.9991	1.0000	.9991	26.73	.1746	.001834
2.811	10.479	2323.	1.0000	1.0000	1.0000	26.76	.1220	.001834
2.890	10.774	2388.	1.0000	1.0000	1.0000	26.76	.0693	.001834

TABLE A 4. (CONT.)
PROFILE - C11-5 -- - P1111 PRESSURE DATA

EDGE MACH NO.= .1072		TOTAL PRESSURE= .1001E+06 N/M ² ?		TOTAL TEMPERATURE= 312.75 DEG-K				
X= 167.64 CM		DELTA STAR= .3759 CM		THETA= .2843 CM				
RE-DELTA-STAR= .8210.		RE-THETA= .6209.		M= 1.322				
LEAST SQUARE FIT PARAMETERS		CF= .002786		PI= .4346				
UTAU= 1.4204 M/SEC		YMAX= 2.383 CM		YMIN= .097 CM				
CHISQR= .9702E-05				DELTA= 2.5844 CM				
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHDE	U/U	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	1.0000	0.0000	0.00	1.0000	0.000000
.031	.111	25.	.4877	1.0000	.4877	13.05	1.0000	0.000000
.032	.114	26.	.4942	1.0000	.4942	13.28	.9999	0.000000
.035	.125	28.	.5078	1.0000	.5078	13.59	.9994	.000002
.040	.142	32.	.5255	1.0000	.5255	14.06	.9992	.000004
.043	.152	35.	.5319	1.0000	.5319	14.73	.9990	.000006
.051	.181	42.	.5487	1.0000	.5487	16.48	.9983	.000010
.057	.203	47.	.5562	1.0000	.5562	16.84	.9977	.000013
.067	.234	54.	.5695	1.0000	.5695	15.24	.9968	.000017
.081	.284	66.	.5840	1.0000	.5840	15.43	.9954	.000023
.097	.343	79.	.5925	1.0000	.5925	15.45	.9937	.000031
.114	.401	93.	.6036	1.0000	.6036	16.15	.9919	.000038
.120	.454	105.	.6131	1.0000	.6131	16.41	.9901	.000045
.145	.510	118.	.6279	1.0000	.6279	16.80	.9882	.000052
.161	.565	131.	.6359	1.0000	.6359	17.01	.9862	.000059
.192	.678	157.	.6487	1.0000	.6487	17.36	.9820	.000074
.226	.795	184.	.6627	1.0000	.6627	17.73	.9773	.000089
.256	.901	209.	.6752	1.0000	.6752	18.07	.9728	.000103
.288	1.015	235.	.6837	1.0000	.6837	18.30	.9677	.000119
.319	1.124	261.	.6982	1.0000	.6982	18.58	.9674	.000134
.339	1.403	325.	.7193	1.0000	.7193	19.25	.9484	.000173
.470	1.683	390.	.7376	1.0000	.7376	19.74	.9324	.000215
.637	2.241	520.	.7674	1.0000	.7674	20.54	.8949	.000304
.796	2.800	649.	.8003	1.0000	.8003	21.42	.8493	.000400
.954	3.359	779.	.8299	1.0000	.8299	22.21	.7949	.000523
1.113	3.916	909.	.8556	1.0000	.8556	22.89	.7317	.000648
1.273	4.480	1039.	.8729	1.0000	.8729	23.36	.6594	.000784
1.509	5.592	1297.	.9165	1.0000	.9165	24.53	.4973	.001064
1.909	6.716	1558.	.9557	1.0000	.9557	25.57	.3299	.001344
2.048	7.275	1688.	.9695	1.0000	.9695	25.94	.2348	.001474
2.224	7.825	1816.	.9831	1.0000	.9831	26.31	.1598	.001593
2.383	8.383	1945.	.9891	1.0000	.9891	26.47	.0853	.001644
2.545	8.953	2077.	.9958	1.0000	.9958	26.65	.0244	.001777
2.704	9.511	2207.	.9983	1.0000	.9983	26.71	0.0000	.001815
2.862	10.069	2337.	1.0000	1.0000	1.0000	26.76	0.0000	.001815
2.942	10.349	2402.	1.0000	1.0000	1.0000	26.76	0.0000	.001815

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TABLE A 4. (CONT.)
PROFILE - CIT-6 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .1031 TOTAL PRESSURE = $1.275E+06$ N/m²
X = 182.88 CM TOTAL TEMPERATURE = 303.75 DEG-K

Y (CM)	Y-THETA	Y-PLUS	M/ME	RHO/RHOE	U/U _∞	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	1.0000	0.0700	0.07	1.0000	0.000000
.031	.108	26.	.4991	1.0000	.4991	13.43	1.0000	0.000000
.034	.119	29.	.5156	1.0000	.5156	13.87	.9997	.000001
.038	.130	31.	.5252	1.0000	.5252	14.13	.9994	.000003
.041	.140	34.	.5331	1.0000	.5331	14.34	.9992	.000004
.045	.154	37.	.5408	1.0000	.5408	14.55	.9988	.000006
.049	.165	40.	.5486	1.0000	.5486	14.76	.9985	.000008
.052	.178	43.	.5531	1.0000	.5531	14.88	.9982	.000010
.058	.200	49.	.5591	1.0000	.5591	15.04	.9976	.000013
.065	.222	56.	.5651	1.0000	.5651	15.20	.9971	.000015
.070	.241	59.	.5725	1.0000	.5725	15.40	.9965	.000018
.074	.254	62.	.5782	1.0000	.5782	15.56	.9961	.000020
.091	.314	77.	.5911	1.0000	.5911	15.91	.9944	.000027
.104	.363	89.	.6009	1.0000	.6009	16.17	.9928	.000034
.122	.417	102.	.6133	1.0000	.6133	16.50	.9911	.000041
.138	.474	116.	.6227	1.0000	.6227	16.76	.9891	.000048
.154	.529	129.	.6295	1.0000	.6295	16.94	.9872	.000055
.170	.582	143.	.6361	1.0000	.6361	17.12	.9852	.000062
.195	.669	164.	.6477	1.0000	.6477	17.43	.9818	.000073
.241	.825	202.	.6668	1.0000	.6668	17.94	.9754	.000094
.288	.987	242.	.6805	1.0000	.6805	18.31	.9682	.000116
.352	1.204	295.	.6987	1.0000	.6987	18.80	.9577	.000146
.431	1.474	362.	.7199	1.0000	.7199	19.37	.9432	.000185
.511	1.747	428.	.7382	1.0000	.7382	19.86	.9270	.000224
.649	2.200	562.	.7748	1.0000	.7748	20.45	.8890	.000317
.828	3.376	695.	.8075	1.0000	.8075	21.73	.8432	.000418
.987	4.462	828.	.8320	1.0000	.8320	22.39	.7898	.000530
1.304	6.462	1095.	.8741	1.0000	.8741	23.52	.6553	.000743
1.622	8.543	1361.	.9207	1.0000	.9207	24.77	.4945	.001059
1.939	10.634	1628.	.9546	1.0000	.9546	25.69	.3209	.001334
2.257	12.719	1894.	.9762	1.0000	.9762	26.27	.1562	.001579
2.574	14.805	2161.	.9907	1.0000	.9907	26.66	.0265	.001763
2.733	16.938	2296.	.9974	1.0000	.9974	26.84	0.0000	.001400
2.892	19.091	2427.	.9983	1.0000	.9983	26.86	0.0000	.001400
2.971	20.143	2494.	1.0000	1.0000	1.0000	26.91	0.0000	.001400

PI = .5374
YMIN = .091 CM
DELTA = 2.6563 CM

UE = 37.34 M/SEC DELTA STAR = .3860 CM T-THETA = .2924 CM M = 1.320
RE-THETA = .6004.
NIMALL = .1653 CM**2/.EC

LEAST SQUARE FIT PARAMETERS
UTAU = 1.3875 M/SEC CF = .002756
CHISQR = .308E-04 YMAX = 2.257 CM

TABLE A 6. (CONT.)
PROFILE - C11-7 - - - PITOT PRESSURE DATA

ENGINE MACH NO. = .1036 TOTAL PRESSURE = .9870E+05 N/M²
X = 198.12 CM INITIAL TEMPERATURE = 377.75 DEG-K

UE = 35.91 M/SEC DELTA STAR = .4404 CM THETA = .328 CM M = 1.323
RE-DELTA-STAR = .9421. RE-THETA = 7270. MINALL = .1643 CM/SEC

LEAST SQUARE FIT PARAMETERS
UTAU = 1.3180 M/SEC CF = .002089
CHISQR = .2505E-04 VMAX = 2.831 CM

DC-TAU = 3.0186 CM

PI = .4443
VMAX = .087 CM

Y (CM)	Y/THETA	Y-PLUS	M/E	RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	1.0000	0.0000	0.00	1.0000	0.000000
.031	.095	25.	.5024	1.0000	.5124	13.69	1.0000	0.000000
.031	.095	25.	.5063	1.0000	.5063	13.79	.9999	0.000000
.040	.120	32.	.5237	1.0000	.5237	14.26	.9994	0.000003
.047	.144	38.	.5406	1.0000	.5406	14.73	.9989	0.000004
.057	.171	45.	.5574	1.0000	.5574	14.91	.9982	0.000010
.071	.215	57.	.5819	1.0000	.5819	15.31	.9971	0.000014
.087	.263	70.	.5794	1.0000	.5794	15.78	.9958	0.000021
.103	.311	83.	.5884	1.0000	.5884	16.03	.9944	0.000027
.127	.362	94.	.6008	1.0000	.6008	16.34	.9929	0.000033
.151	.453	121.	.6171	1.0000	.6171	16.81	.9900	0.000044
.182	.549	146.	.6286	1.0000	.6286	17.12	.9847	0.000054
.214	.644	172.	.6454	1.0000	.6454	17.59	.9832	0.000067
.247	.743	198.	.6581	1.0000	.6581	17.93	.9784	0.000074
.278	.835	223.	.6663	1.0000	.6663	18.15	.9757	0.000091
.309	.930	248.	.6744	1.0000	.6744	18.37	.9714	0.000103
.349	1.149	312.	.6993	1.0000	.6993	19.05	.9607	0.000134
.448	1.407	375.	.7171	1.0000	.7171	19.53	.9454	0.000164
.628	1.944	544.	.7480	1.0000	.7480	20.37	.92	0.000234
.746	2.162	630.	.7741	1.0000	.7741	21.09	.89	0.000313
.944	2.839	757.	.7993	1.0000	.7993	21.77	.86	0.000349
1.173	3.314	885.	.8249	1.0000	.8249	22.47	.80	0.000493
1.263	3.704	1013.	.8481	1.0000	.8481	23.12	.74	0.000595
1.541	4.750	1248.	.8841	1.0000	.8841	24.19	.67	0.000817
1.848	5.704	1523.	.9279	1.0000	.9279	25.28	.64	0.001353
2.216	6.644	1777.	.9519	1.0000	.9519	25.93	.324	0.001245
2.533	7.412	2032.	.9753	1.0000	.9753	26.57	.1841	0.001443
2.844	7.654	2064.	.9782	1.0000	.9780	26.64	.1796	0.001502
2.947	7.752	2069.	.9794	1.0000	.9708	26.69	.1732	0.001511
2.840	7.994	2134.	.9845	1.0000	.9817	26.74	.1644	0.001520
2.841	8.567	2287.	.9914	1.0000	.9845	26.82	.1341	0.001566
3.404	9.040	2413.	.9943	1.0000	.9914	27.14	.0444	0.001654
3.148	9.521	2541.	.9981	1.0000	.9943	27.14	0.0000	0.001719
3.484	10.475	2764.	1.0000	1.0000	1.0000	27.24	0.0000	0.001749
3.643	10.948	2922.	1.0000	1.0000	1.0000	27.24	0.0000	0.001749

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USE 37.62 M/SEC
DELTA STAD 4545 CM
DE-TIMEFAN 7475.
QRTA.
NO 1.321

LEAF SOURCE CIT PARAMECUS
 CEM = 0.0249
 UTM = 1.9937 m/sec
 CUS = 1.892E-04
 VAX = 2.944 CM
 P1 = .4453
 VMAX = .007 CM
 NFITA = 3.1494 CM

Y (cm)	V/T/META	Y-PLUS	M/MS	BM/MBM/F	U/H	H-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	1.0000	0.0000	0.00	1.0000	0.000000
0.010	0.009	25.	4.478	1.0000	.4478	13.14	1.0000	0.000000
0.020	0.019	30.	4.455	1.0000	.4455	13.22	.9995	0.000000
0.030	0.029	30.	4.401	1.0000	.4401	13.58	.9990	0.000000
0.040	0.039	41.	4.236	1.0000	.4236	14.26	.9984	0.000000
0.050	0.049	46.	4.003	1.0000	.4003	14.71	.9985	0.000011
0.060	0.058	50.	3.514	1.0000	.3514	15.12	.9974	0.000014
0.070	0.068	53.	3.006	1.0000	.3006	15.47	.9974	0.000017
0.080	0.078	70.	2.524	1.0000	.2524	15.59	.9958	0.000024
0.090	0.087	77.	2.295	1.0000	.2295	15.87	.9950	0.000032
0.100	0.096	103.	2.026	1.0000	.2026	16.33	.9922	0.000035
0.150	0.146	156.	1.641	1.0000	.1641	16.74	.9854	0.000064
0.200	0.196	187.	1.313	1.0000	.1313	17.12	.9855	0.000094
0.250	0.246	193.	1.026	1.0000	.1026	18.14	.9809	0.000134
0.300	0.296	225.	0.879	1.0000	.0879	18.74	.9872	0.000154
0.350	0.346	322.	0.739	1.0000	.0739	19.33	.9841	0.000184
0.400	0.396	400.	0.734	1.0000	.0734	20.57	.9839	0.000174
0.450	0.446	504.	0.781	1.0000	.0781	20.57	.9852	0.000244
0.500	0.496	650.	0.701	1.0000	.0701	21.25	.9825	0.000327
0.550	0.546	745.	0.661	1.0000	.0661	21.91	.9819	0.000406
0.600	0.596	873.	0.620	1.0000	.0620	22.58	.9827	0.000497
0.650	0.646	1047.	0.660	1.0000	.0660	23.04	.9845	0.000584
0.700	0.696	1300.	0.702	1.0000	.0702	23.37	.9827	0.000701
0.750	0.746	1565.	0.745	1.0000	.0745	24.22	.9844	0.000790
0.800	0.796	1801.	0.793	1.0000	.0793	24.58	.9818	0.000821
0.850	0.846	1847.	0.821	1.0000	.0821	25.17	.9801	0.000910
0.900	0.896	1907.	0.860	1.0000	.0860	26.04	.9827	0.001264
0.950	0.946	2150.	0.945	1.0000	.0945	26.65	.9813	0.001472
1.000	0.996	2436.	1.000	1.0000	.9999	26.94	.9828	0.001647
1.050	0.996	2836.	1.040	1.0000	.9940	27.10	.9784	0.001710
1.100	0.996	2971.	1.045	1.0000	.9945	27.10	.9792	0.001740
1.150	0.996	2644.	1.044	1.0000	.9944	27.19	0.9700	0.001752
1.200	0.996	2621.	1.0000	1.0000	1.0000	27.24	0.9600	0.001752
1.250	0.996	2684.	1.0000	1.0000	1.0000	27.24	0.9600	0.001752

TABLE A 4. (CONT.)
PROFILE - CIT-9 - - - PITOT PRESSURE DATA

FDC# MACH NO.= .1070		TOTAL PRESSURE= .1001E+06 N/m ²		TOTAL TEMPERATURE= 310.05 DEG-K		M= 1.315	
X= 228.60 CM		DELTA STAR= .4914 CM		THETA= .3459 CM		MULL= .1714 CM ² /SEC	
RE-DELTA-STAR= .10410.		RE-THETA= 8088.		PI= .6139		DELTA= 3.4060 CM	
CMISOR= .2107E-04		CF= .002676		YMIN= .084 CM			
LEAST SQUARE FIT PARAMETERS							
UTIME= 1.3837 M/SEC		Y-PLUS		M/RE		RM/RMRF	
CMISOR= .2107E-04		Y/THETA		M/RE		U/IF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y-PLUS		M/RE		RM/RMRF	
Y (CM)		Y					

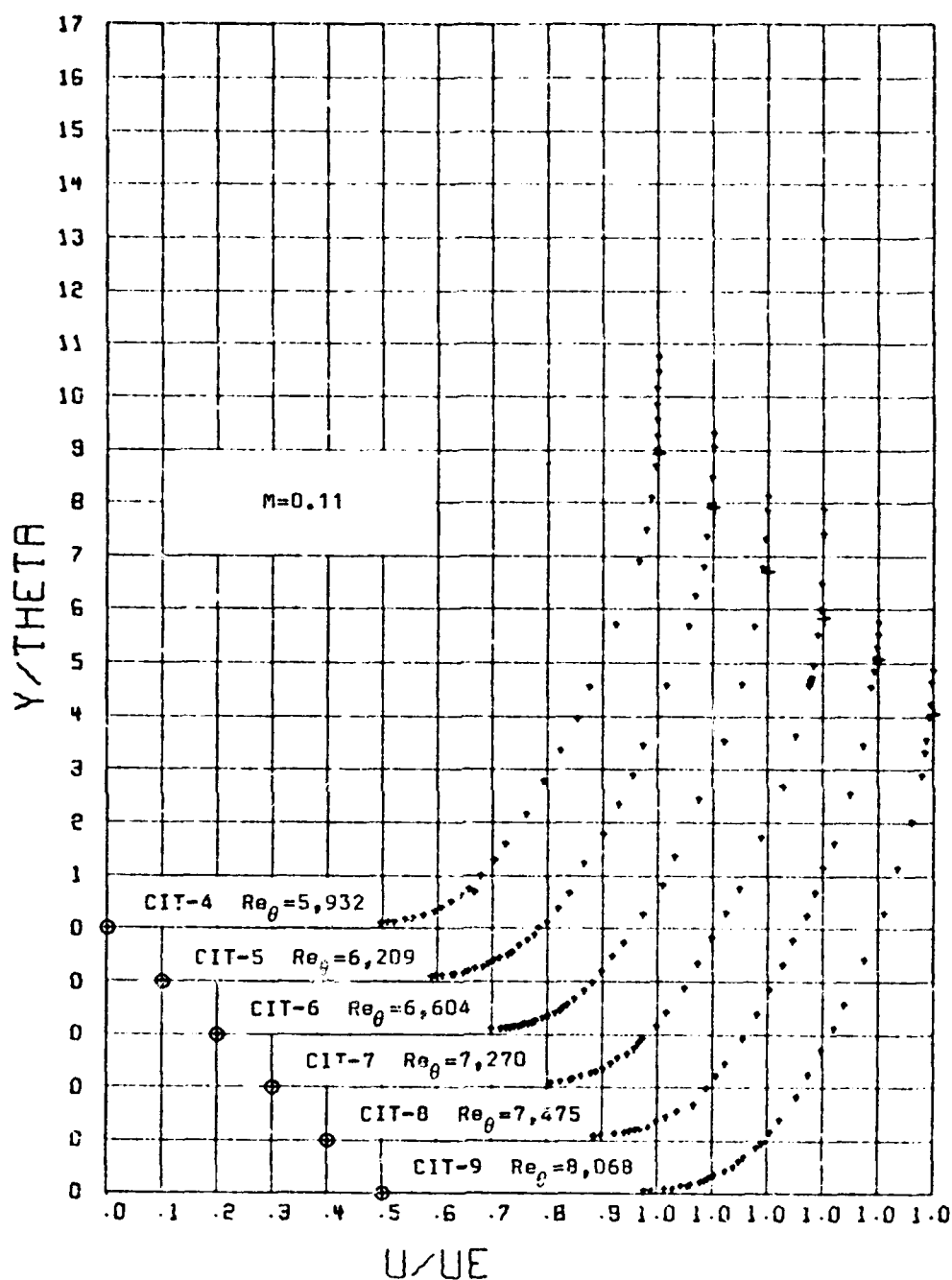


Figure A1. Mean Velocity Profiles.

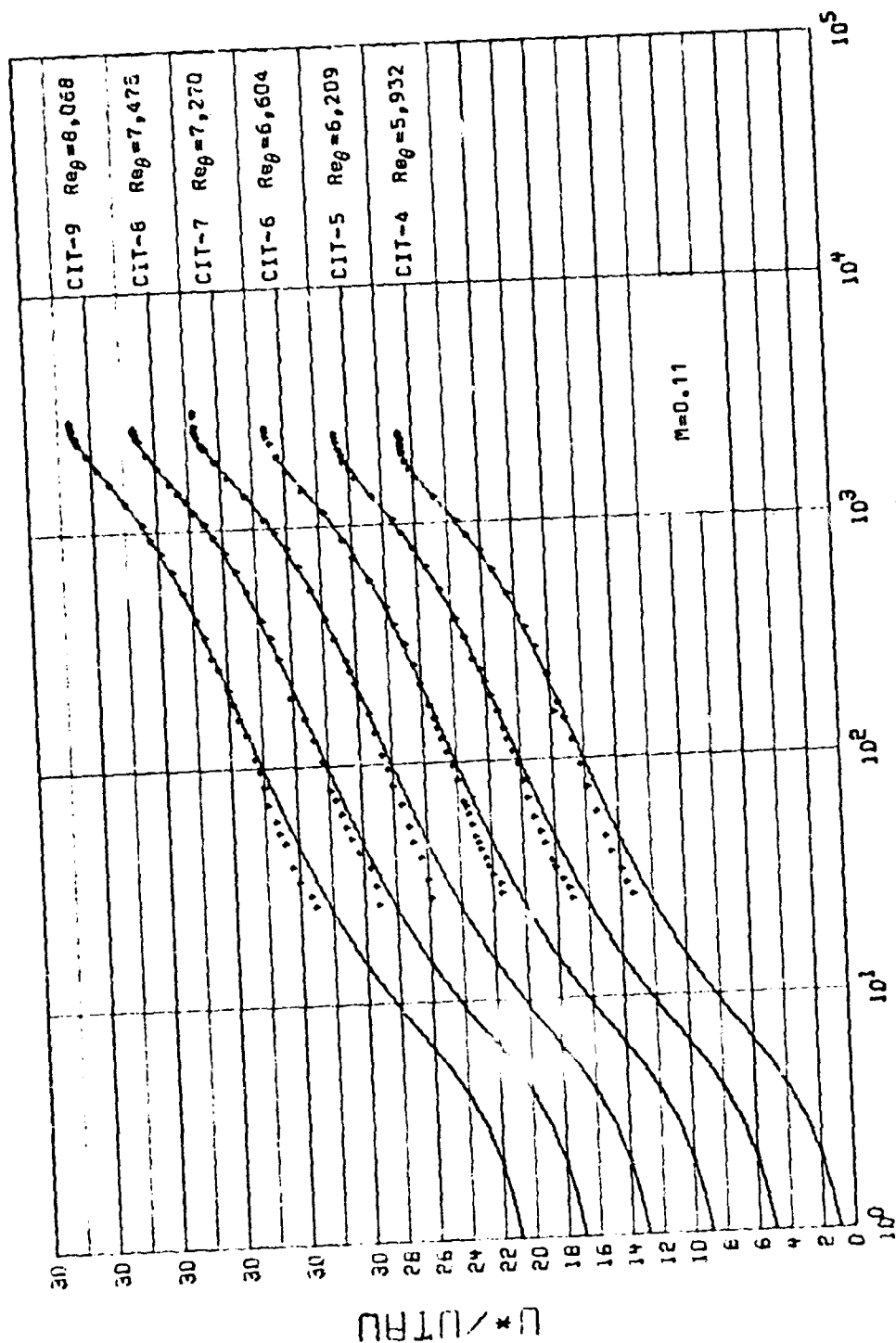


Figure A2. Van Driest Scaled Mean Velocity Profiles.

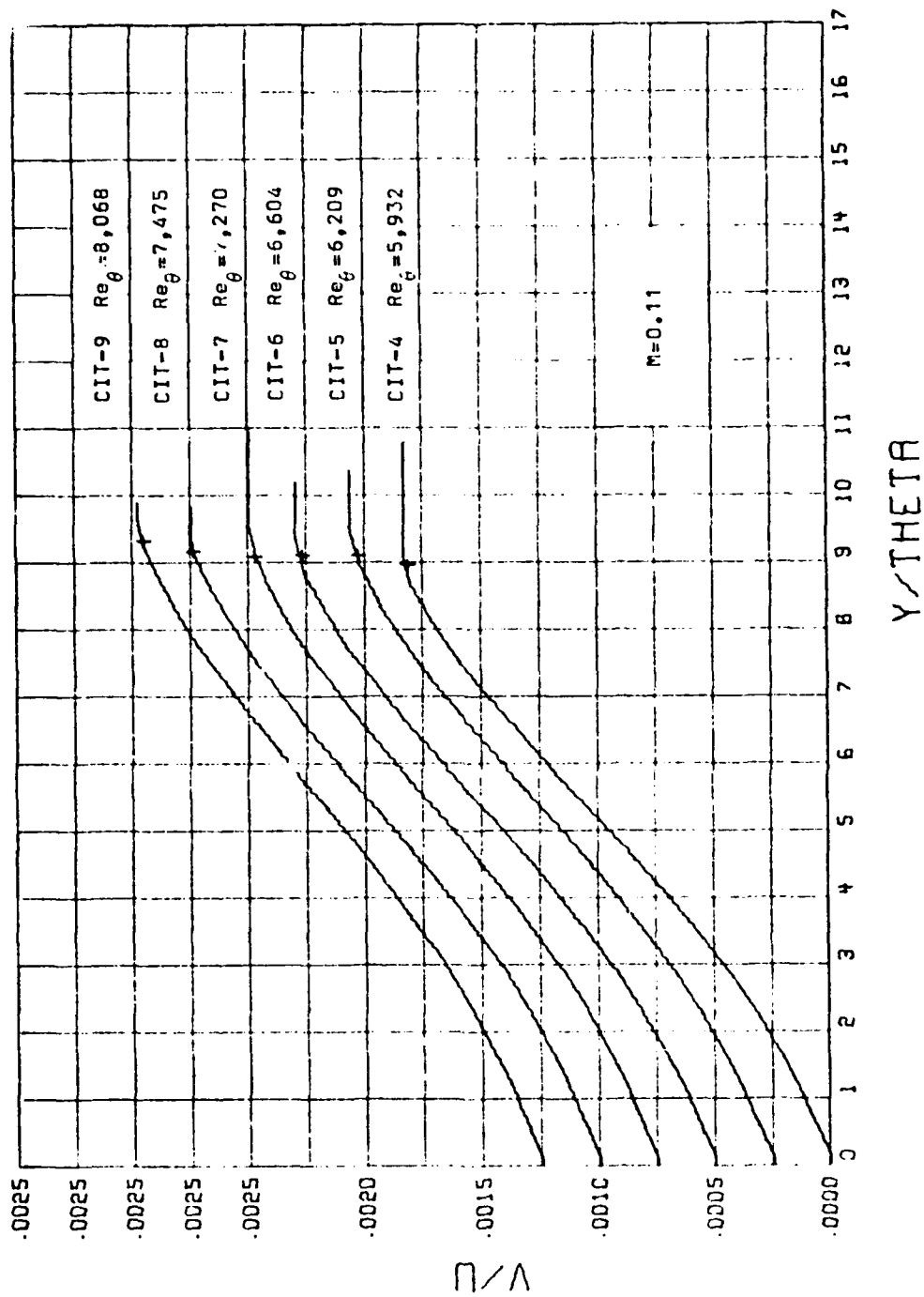

 Y/Θ

Figure A3. Normal Velocity Distribution.

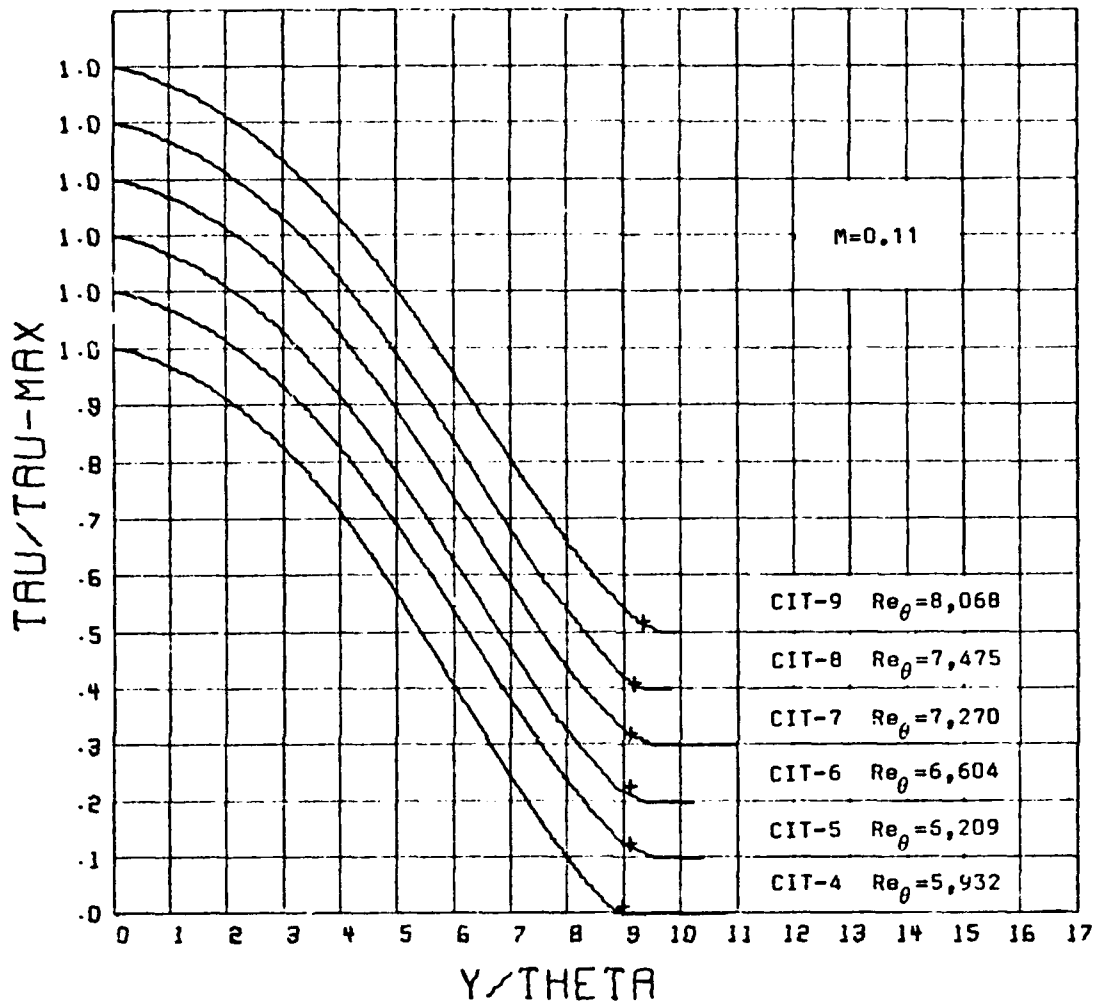


Figure A4. Shear Stress Distribution.

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TABLE A 5. DATA SUMMARY
PROFILE - JPL-1 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .5927 TOTAL PRESSURE = .6665E+05 N/M²
X = -68.43 CM TOTAL TEMPERATURE = 315.73 DEG-K

UE = 201.05 M/SEC RE-DELTA-STAR = 27510.		DELTA STAR = .3796 CM RE-THETA = 18870.		THETA = .2604 CM NUWALL = .3128 CM=2/SEC		M = 1.457		DELTA = 2.4827 CM	
LEAST SQUARE FIT PARAMETERS UTAU = 6.8401 M/SEC CHISQR = .1455E-04		CF = .002179 YMAX = 2.340 CM		PI = .7613 YMIN = .049 CM					
Y (CM)	V/THETA	Y-PLUS	M/ME	RHO/RHREF	U/UIF	U-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.9414	0.0000	0.00	1.0000	0.000000	
.010	.030	22.	.3695	.9494	.3702	11.16	1.0000	0.000000	
.019	.073	41.	.4757	.9547	.4848	14.34	.9994	.000003	
.035	.134	77.	.5252	.9574	.5367	15.82	.9982	.000009	
.069	.268	152.	.5845	.9614	.5941	17.58	.9950	.000021	
.101	.390	222.	.6045	.9620	.6180	18.23	.9917	.000032	
.130	.502	284.	.6218	.9640	.6333	18.69	.9882	.000042	
.157	.604	344.	.6394	.9653	.6504	19.20	.9849	.000052	
.182	.702	399.	.6579	.9648	.6691	19.75	.9815	.000061	
.213	.819	445.	.6640	.9672	.6781	19.93	.9772	.000073	
.226	.867	484.	.6791	.9684	.6891	20.38	.9753	.000077	
.261	1.004	572.	.6901	.9693	.7009	20.70	.9698	.000091	
.294	1.131	644.	.6876	.9691	.6984	20.62	.9645	.000104	
.314	1.213	691.	.7043	.9704	.7149	21.12	.9608	.000113	
.345	1.326	755.	.7141	.9713	.7245	21.40	.9557	.000125	
.388	1.491	849.	.7185	.9714	.7289	21.53	.9676	.000143	
.425	1.633	930.	.7314	.9727	.7416	21.91	.9402	.000159	
.449	1.725	983.	.7358	.9731	.7459	22.04	.9352	.000170	
.505	1.940	1105.	.7543	.9747	.7640	22.59	.9278	.000194	
.542	2.104	1199.	.7587	.9751	.7674	22.70	.9125	.000217	
.577	2.218	1263.	.7646	.9754	.7720	22.88	.9052	.000232	
.617	2.369	1349.	.7740	.9767	.7852	23.22	.8948	.000257	
.651	2.501	1426.	.7853	.9775	.7943	23.49	.8754	.000271	
.685	2.632	1499.	.7957	.9785	.8044	23.79	.8582	.000290	
.741	2.847	1621.	.7947	.9789	.8075	23.49	.8433	.000322	
.787	3.022	1721.	.7949	.9802	.8075	23.49	.8433	.000349	
.839	3.222	1834.	.8143	.9802	.8075	23.49	.8433	.000382	
.894	3.471	1977.	.8249	.9812	.8111	24.64	.8511	.000424	
.944	3.627	2068.	.8330	.9820	.8205	24.98	.8552	.000452	
.999	3.797	2163.	.8342	.9822	.8417	24.91	.8470	.000483	
1.049	4.027	2293.	.8450	.9832	.8521	25.23	.8412	.000524	
1.103	4.231	2410.	.8590	.9844	.8656	25.63	.8370	.000566	
1.158	4.444	2532.	.8567	.9844	.8635	25.57	.8304	.000599	
1.206	4.631	2638.	.8721	.9850	.8733	26.01	.8267	.000644	
1.248	4.797	2729.	.8792	.9867	.8851	26.72	.8253	.000679	
1.308	5.021	2860.	.8786	.9864	.8945	26.70	.8139	.000724	
1.343	5.234	2982.	.8924	.9864	.8978	26.40	.8036	.000774	
1.422	5.460	3110.	.9057	.9895	.9115	27.01	.8009	.000822	
1.480	5.694	3238.	.9092	.9894	.9188	27.04	.8175	.000871	
1.540	5.913	3368.	.9251	.9894	.9201	27.54	.8276	.000921	
1.602	6.152	3504.	.9285	.9919	.9323	27.64	.8457	.000973	

Y (CM)	Y/THETA	Y-PLUS	TABLE A 5. (CONT.) W/ME	RHO/RHOE	U/UE	II-PLUS	TAU/TAI-MAX	V/U
1.653	6.386	3638.	.9360	.9927	.9304	27.85	.4092	.001024
1.779	6.640	3782.	.9420	.9934	.9451	28.02	.3696	.001079
1.744	6.849	3901.	.9457	.9937	.9482	28.12	.3369	.001123
1.832	7.035	4007.	.9522	.9945	.9568	28.37	.3087	.001161
1.877	7.205	4104.	.9550	.9948	.9574	28.40	.2870	.001194
1.929	7.405	4218.	.9647	.9959	.9647	28.68	.2518	.001236
1.982	7.610	4335.	.9650	.9959	.9670	28.69	.2215	.001275
2.039	7.829	4460.	.9763	.9972	.9777	29.01	.1909	.001314
2.092	8.034	4576.	.9775	.9974	.9788	29.04	.1617	.001352
2.164	8.307	4732.	.9885	.9986	.9892	29.36	.1258	.001398
2.227	8.551	4871.	.9864	.9984	.9872	29.30	.0957	.001436
2.282	8.761	4980.	.9924	.9991	.9929	29.47	.0720	.001465
2.340	8.985	5118.	.9915	.9990	.9920	29.44	.0484	.001495
2.397	9.204	5243.	.9952	.9994	.9954	29.55	.0277	.001520
2.441	9.448	5382.	.9931	.9991	.9935	29.49	.0074	.001545
2.509	9.633	5487.	.9970	.9996	.9972	29.50	0.0000	.001554
2.562	9.838	5674.	1.0014	1.0001	1.0013	29.72	0.0000	.001554
2.670	10.253	5840.	1.0032	1.0003	1.0030	29.78	0.0000	.001554
2.748	10.706	6098.	1.0092	1.0009	1.0092	29.69	0.0000	.001554
2.803	11.145	6348.	1.0045	1.0005	1.0043	29.81	0.0000	.001554
3.002	11.525	6565.	1.0006	1.0000	1.0006	29.70	0.0000	.001554
3.094	11.881	6767.	1.0004	1.0000	1.0006	29.70	0.0000	.001554
3.191	12.251	6978.	1.0041	1.0004	1.0039	29.80	0.0000	.001554
3.288	12.622	7190.	.9977	.9997	.9978	29.62	0.0000	.001554
3.376	12.963	7384.	.9981	.9997	.9982	29.63	0.0000	.001554
3.455	13.266	7556.	1.0025	1.0007	1.0023	29.76	0.0000	.001554
3.535	13.573	7731.	.9990	.9998	.9991	29.66	0.0000	.001554

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TABLE A 5. (CONT.)
PROFILE - JPL-2 - - - PITOT PRESSURE DATA

EDGE MACH NO.= .5927				TOTAL PRESSURE=.6665E+05 N/M ⁰⁰²				TOTAL TEMPERATURE= 310.10 DEG-K							
X=-26.21 CM				DELTA STAR=-.4179 CM				THETA=.2902 CM				M= 1.439			
UE= 202.47 M/SEC				RE-THETA= 20180.				NIMALL= .3209 CM				DELTA= 2.4530 CM			
RE-DELTA-STAR= 29060.															
LEAST SQUARE FIT PARAMETERS				CF= .002201				PI= .4484							
UTAU= 4.9224 M/SEC				YMAX= 2.672 CM				YMIN= .085 CM							
CHISQR= .1125E-04															
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOF	U/UF	I-PLUS	TAU/TAU-MAX	V/U							
0.000	0.000	0.	0.0000	.9414	0.0000	0.00	1.0000	0.000000							
.010	.035	21.	.3894	.9503	.3995	11.70	1.0000	0.000000							
.020	.070	43.	.4825	.9550	.4937	14.47	.9994	0.000003							
.033	.113	71.	.5135	.9568	.5250	15.39	.9985	0.000007							
.048	.166	104.	.5482	.9590	.5588	16.42	.9973	0.000012							
.064	.223	139.	.5781	.9610	.5897	17.30	.9959	0.000018							
.085	.293	183.	.5945	.9621	.6041	17.79	.9940	0.000024							
.104	.358	224.	.6079	.9630	.6195	18.18	.9920	0.000030							
.120	.415	260.	.6275	.9645	.6389	18.76	.9903	0.000034							
.149	.514	323.	.6440	.9657	.6554	19.25	.9870	0.000045							
.170	.586	367.	.6563	.9666	.6674	19.61	.9846	0.000052							
.201	.695	435.	.6669	.9674	.6780	19.92	.9806	0.000063							
.224	.774	484.	.6812	.9684	.6922	20.34	.9777	0.000070							
.243	.840	524.	.6863	.9690	.7022	20.49	.9751	0.000077							
.265	.914	572.	.6914	.9694	.7072	20.63	.9721	0.000084							
.290	1.001	627.	.6975	.9695	.7133	20.67	.9685	0.000093							
.316	1.099	682.	.7097	.9709	.7203	21.17	.9647	0.000102							
.341	1.174	736.	.7111	.9710	.7216	21.21	.9608	0.000111							
.372	1.241	802.	.7180	.9714	.7284	21.41	.9559	0.000122							
.400	1.270	820.	.7224	.9720	.7328	21.54	.9487	0.000143							
.426	1.285	835.	.7246	.9734	.7516	22.10	.9371	0.000164							
.453	1.294	846.	.7284	.9742	.7583	22.33	.9263	0.000176							
.480	1.304	854.	.7364	.9754	.7719	22.71	.9150	0.000209							
.500	1.391	862.	.7494	.9761	.7749	22.91	.9030	0.000233							
.523	1.423	867.	.7597	.9770	.7890	23.49	.8903	0.000240							
.553	1.462	874.	.7644	.9777	.7958	23.52	.8870	0.000244							
.587	1.482	881.	.7691	.9784	.8077	23.77	.8826	0.000244							
.622	1.504	888.	.7746	.9794	.8144	24.03	.8753	0.000233							
.652	1.513	891.	.7801	.9801	.8210	24.17	.8693	0.000236							
.680	1.524	894.	.7854	.9808	.8274	24.37	.8644	0.000234							
.703	1.538	897.	.7904	.9815	.8351	24.59	.8604	0.000234							
.723	1.554	900.	.7954	.9824	.8437	24.91	.8573	0.000233							
.743	1.569	903.	.7994	.9834	.8545	25.20	.8549	0.000233							
.763	1.584	906.	.8044	.9843	.8654	25.59	.8528	0.000233							
.783	1.599	909.	.8094	.9852	.8763	25.74	.8508	0.000231							
.803	1.614	912.	.8144	.9861	.8872	25.67	.8491	0.000233							
.823	1.629	915.	.8194	.9870	.8981	26.11	.8464	0.000233							
.843	1.644	918.	.8244	.9879	.9090	26.18	.8437	0.000233							
.863	1.659	921.	.8294	.9888	.9200	26.34	.8407	0.000233							
.883	1.674	924.	.8344	.9897	.9310	26.47	.8384	0.000233							
.903	1.689	927.	.8394	.9906	.9420		.8364	0.000233							
.923	1.704	930.	.8444	.9915			.8344	0.000233							
.943	1.719	933.	.8494	.9924			.8324	0.000233							
.963	1.734	936.	.8544	.9933			.8304	0.000233							
.983	1.749	939.	.8594	.9942			.8284	0.000233							
1.003	1.764	942.	.8644	.9951			.8264	0.000233							
1.023	1.779	945.	.8694	.9960			.8244	0.000233							
1.043	1.794	948.	.8744	.9969			.8224	0.000233							
1.063	1.809	951.	.8794	.9978			.8204	0.000233							
1.083	1.824	954.	.8844	.9987			.8184	0.000233							
1.103	1.839	957.	.8894	.9996			.8164	0.000233							
1.123	1.854	960.	.8944	.9995			.8144	0.000233							
1.143	1.869	963.	.8994	.9994			.8124	0.000233							
1.163	1.884	966.	.9044	.9993			.8104	0.000233							
1.183	1.899	969.	.9094	.9992			.8084	0.000233							
1.203	1.914	972.	.9144	.9991			.8064	0.000233							
1.223	1.929	975.	.9194	.9990			.8044	0.000233							
1.243	1.944	978.	.9244	.9989			.8024	0.000233							
1.263	1.959	981.	.9294	.9988			.8004	0.000233							
1.283	1.974	984.	.9344	.9987			.7984	0.000233							
1.303	1.989	987.	.9394	.9986			.7964	0.000233							
1.323	2.004	990.	.9444	.9985			.7944	0.000233							
1.343	2.019	993.	.9494	.9984			.7924	0.000233							
1.363	2.034	996.	.9544	.9983			.7904	0.000233							
1.383	2.049	999.	.9594	.9982			.7884	0.000233							
1.403	2.064	1002.	.9644	.9981			.7864	0.000233							
1.423	2.079	1005.	.9694	.9980			.7844	0.000233							
1.443	2.094	1008.	.9744	.9979			.7824	0.000233							
1.463	2.109	1011.	.9794	.9978			.7804	0.000233							
1.483	2.124	1014.	.9844	.9977			.7784	0.000233							
1.503	2.139	1017.	.9894	.9976			.7764	0.000233							

TABLE A 5. (CONT.)
H/ME

Y (CM)	Y/THEA	Y-PLUS	H/ME	RND/R/ME	U/UE	II-PLUS	TAU/TAU-MAX	V/U
1.567	5.399	3380.	.9005	.9889	.9056	26.70	.5747	.000783
1.619	5.578	3493.	.9078	.9897	.9125	26.91	.5496	.0007820
1.668	5.748	3600.	.9109	.9900	.9155	27.00	.5254	.000785
1.718	5.919	3706.	.9181	.9908	.9223	27.20	.5007	.000791
1.771	6.103	3821.	.9216	.9914	.9276	27.36	.4738	.0007930
1.832	6.313	3953.	.9292	.9920	.9329	27.52	.4427	.0007974
1.893	6.523	4084.	.9358	.9927	.9392	27.71	.4114	.0008018
1.944	6.698	4194.	.9442	.9936	.9472	27.95	.3852	.0008054
2.005	6.908	4326.	.9466	.9936	.9476	27.96	.3537	.0008097
2.053	7.074	4430.	.9530	.9946	.9556	28.20	.3288	.0008131
2.117	7.293	4567.	.9543	.9948	.9573	28.25	.2963	.0008175
2.165	7.459	4671.	.9632	.9957	.9652	28.49	.2716	.0008204
2.241	7.722	4835.	.9673	.9962	.9691	28.61	.2439	.0008259
2.270	7.822	4898.	.9703	.9965	.9720	28.70	.2196	.0008276
2.325	8.010	5016.	.9755	.9971	.9769	28.84	.1934	.0008311
2.378	8.194	5131.	.9784	.9975	.9796	28.92	.1685	.0008343
2.432	8.378	5246.	.9777	.9976	.9790	28.90	.1444	.0008374
2.479	8.540	5347.	.9831	.9980	.9840	29.06	.1239	.0008400
2.527	8.706	5452.	.9868	.9984	.9876	29.16	.1036	.0008426
2.578	8.881	5561.	.9907	.9989	.9913	29.28	.0832	.0008452
2.626	9.047	5655.	.9946	.9994	.9952	29.39	.0644	.0008475
2.672	9.205	5764.	.9949	.9994	.9952	29.39	.0483	.0008498
2.711	9.340	5849.	.9923	.9991	.9928	29.32	.0349	.0008512
2.764	9.524	5944.	.9963	.9995	.9965	29.43	.0260	.0008533
2.805	9.666	6052.	.9967	.9996	.9969	29.45	.0200	.0008548
2.853	9.830	6156.	.9976	.9997	.9978	29.47	.0200	.0008554
2.894	9.970	6263.	.9986	.9998	.9987	29.50	.0200	.0008556
2.980	10.268	6430.	.9986	.9998	.9987	29.50	.0200	.0008556
3.055	10.526	6591.	.9987	.9998	.9987	29.50	.0200	.0008556
3.145	10.807	6764.	.9986	.9998	.9987	29.50	.0200	.0008556
3.204	11.034	6912.	.9986	.9998	.9987	29.50	.0200	.0008556
3.295	11.353	7109.	1.0004	1.0000	1.0004	29.55	.0200	.0008556
3.387	11.668	7306.	1.0004	1.0000	1.0006	29.56	.0200	.0008556
3.465	11.939	7476.	.9999	.9999	.9999	29.56	.0200	.0008554
3.544	12.210	7646.	1.0008	1.0001	1.0008	29.56	.0200	.0008556

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TABLE A 5. (CONT.)
PROFILE - JPL-3 - -- PITOT PRESSURE DATAEDGE MACH NO. = .5986
X = -7.62 CM
TOTAL PRESSURE = .6665E+05 N/M²
TOTAL TEMPERATURE = 373.31 DEG-K

UE = 202.13 M/SEC
RE-DELTA-STAR = 31750.
DELTA STAR = .4333 CM
RE-THETA = 22190.
THETA = .3028 CM
M = 1.430
NUMALL = .3090 CM²/SEC
DELTA = 3.0444 CM

LEAST SQUARE FIT PARAMETERS
CF = .002196
YMAX = 2.858 CM
YMIN = .082 CM
PI = .6224
YMIN = .082 CM

Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOF	U/UF	IP-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.9403	0.0000	0.00	1.0000	0.000000
.010	.033	27.	.4107	.9504	.4213	12.35	1.0000	0.000000
.017	.058	39.	.4796	.9560	.4910	15.40	.9995	0.000102
.030	.100	68.	.5306	.9571	.5424	15.91	.9987	.000006
.041	.138	93.	.5556	.9587	.5674	16.65	.9979	.000310
.047	.222	150.	.5811	.9604	.5929	17.41	.9958	.000017
.082	.712	184.	.6038	.9620	.6156	18.08	.9845	.000122
.089	.327	271.	.6127	.9627	.6245	18.34	.9829	.000027
.107	.354	241.	.6271	.9638	.6388	18.77	.9820	.000030
.132	.436	295.	.6372	.9645	.6489	19.06	.9805	.000037
.148	.490	332.	.6533	.9658	.6647	19.53	.9877	.001342
.172	.570	386.	.6570	.9660	.6684	19.66	.9850	.000050
.218	.721	488.	.6811	.9680	.6923	20.35	.9795	.000064
.251	.830	577.	.6867	.9683	.6958	20.66	.9754	.000075
.275	.909	616.	.6981	.9694	.7090	20.85	.9722	.000083
.299	.989	670.	.7027	.9697	.7131	20.97	.9689	.000091
.332	1.098	743.	.7050	.9699	.7158	21.05	.9642	.000102
.361	1.194	809.	.7109	.9712	.7305	21.49	.9599	.000111
.392	1.295	877.	.7266	.9718	.7371	21.68	.9552	.000122
.414	1.366	925.	.7293	.9720	.7397	21.76	.9519	.000129
.438	1.446	979.	.7332	.9724	.7435	21.84	.9480	.000138
.471	1.555	1053.	.7358	.9726	.7451	21.85	.9425	.000150
.501	1.656	1121.	.7443	.9733	.7546	22.20	.9372	.000161
.534	1.765	1195.	.7539	.9742	.7638	22.48	.9313	.000173
.577	1.907	1291.	.7657	.9745	.7753	22.59	.9232	.000190
.614	2.029	1374.	.7714	.9753	.7753	22.82	.9141	.000204
.642	2.121	1436.	.7793	.9758	.7809	22.99	.9105	.000214
.683	2.255	1527.	.7849	.9770	.7866	23.22	.9020	.000232
.741	2.448	1658.	.7881	.9772	.7940	23.58	.8891	.000257
.829	2.578	1736.	.7957	.9781	.7952	23.41	.8801	.000274
.892	2.737	1853.	.7967	.9781	.8046	23.69	.8665	.000295
.942	2.914	1973.	.8063	.9791	.8149	24.00	.8550	.000320
1.007	3.111	2106.	.8155	.9800	.8377	24.27	.8391	.000348
1.057	3.325	2251.	.8247	.9809	.8377	24.54	.8209	.000381
1.113	3.492	2364.	.8282	.9812	.8371	24.64	.8057	.000407
1.162	3.677	2489.	.8317	.9826	.8401	25.03	.7884	.000434
1.192	3.836	2587.	.8459	.9829	.8423	25.12	.7731	.000462
1.220	4.029	2728.	.8527	.9837	.8507	25.34	.7535	.000495
1.247	4.194	2833.	.8582	.9847	.8547	25.50	.7372	.000527
1.310	4.327	2929.	.8609	.9855	.8676	25.48	.7217	.000547
1.344	4.470	3094.	.8684	.9853	.8749	25.79	.6943	.000590

TABLE A 5. (CONT.)

Y (CM)	Y/THETA	V-PLUS	WAVE	RHO/RHODE	U/UF	II-PLUS	TAU/TAU-MAX	V/U
1.433	4.733	3205.	.8779	.9863	.8840	26.07	.6751	.000621
3335.	4.926	3335.	.8827	.9863	.8885	26.21	.6519	.000657
1.1402	5.102	3455.	.8874	.9873	.8931	26.34	.6300	.000690
1.1565	5.278	3574.	.8947	.9883	.9020	26.61	.6076	.000724
1.1598	5.278	3678.	.8982	.9884	.9036	26.65	.5869	.000755
1.447	5.438	3801.	.9004	.9884	.9017	26.90	.5635	.000790
1.1700	5.614	3935.	.9014	.9889	.9160	27.03	.5368	.000829
1.1760	5.811	4040.	.9184	.9904	.9277	27.23	.5155	.000860
1.1807	5.966	4040.	.9209	.9909	.9311	27.30	.4956	.000884
1.1850	6.109	4136.	.9283	.9917	.9374	27.51	.4604	.000933
1.1925	6.356	4305.	.9302	.9919	.9419	27.57	.4339	.000974
1.242	6.545	4559.	.9385	.9924	.9499	27.81	.4069	.001013
2.039	6.733	4559.	.9438	.9934	.9569	27.96	.3762	.001054
2.104	6.947	4704.	.9569	.9949	.9693	28.33	.3455	.001097
2.169	7.161	4849.	.9562	.9944	.9681	28.51	.3196	.001132
2.223	7.341	4971.	.9633	.9957	.9653	28.55	.2877	.001175
2.242	7.568	5124.	.9633	.9957	.9653	28.55	.2590	.001213
7.773	7.773	5263.	.9647	.9965	.9719	28.71	.2326	.001244
2.413	8.113	5374.	.9702	.9965	.9759	28.83	.2128	.001273
2.457	8.319	5493.	.9744	.9973	.9789	28.92	.1830	.001312
2.524	8.555	5644.	.9774	.9977	.9824	29.03	.1649	.001333
2.544	8.755	5732.	.9813	.9977	.9874	29.03	.1455	.001360
2.614	8.837	5848.	.9813	.9977	.9874	29.16	.1243	.001385
2.664	8.794	5954.	.9848	.9983	.9885	29.18	.1047	.001412
2.720	8.981	6081.	.9857	.9984	.9885	29.27	.0864	.001435
2.771	9.148	6194.	.9899	.9984	.9905	29.43	.0722	.001453
2.811	9.283	6283.	.9956	.9994	.9958	29.35	.0543	.001473
2.858	9.438	6390.	.9974	.9991	.9930	29.35	.0349	.001493
2.924	9.649	6544.	.9984	.9993	.9952	29.41	.0222	.001514
2.972	9.815	6646.	.9991	.9999	.9982	29.53	.0057	.001538
3.035	10.021	6785.	.9966	.9994	.9984	29.46	0.0000	.001563
3.077	10.159	6878.	.9975	.9997	.9977	29.49	0.0000	.001583
3.129	10.331	6995.	.9984	.9999	.9985	29.51	0.0000	.001543
3.171	10.449	7086.	1.0014	1.0001	1.0013	29.60	0.0000	.001543
3.201	10.572	7157.	.9993	.9999	.9994	29.54	0.0000	.001543
3.249	10.792	7307.	.9993	.9999	.9994	29.54	0.0000	.001543
3.315	10.947	7412.	1.0002	1.0000	1.0002	29.56	0.0000	.001543
3.362	11.107	7512.	1.0002	1.0000	1.0012	29.56	0.0000	.001543
3.420	11.291	7645.	.9993	.9999	.9994	29.54	0.0000	.001543
3.449	11.445	7744.	1.0007	1.0000	1.0006	29.53	0.0000	.001543
3.539	11.685	7912.	.9993	.9999	.9994	29.54	0.0000	.001543
3.585	11.836	8016.	1.0002	1.0000	1.0002	29.56	0.0000	.001543
3.615	11.937	8042.	1.0002	1.0000	1.0002	29.56	0.0000	.001543</

TABLE A 5. (CONT.)
PROFILE - JPL-4 -- - PITOT PRESSURE DATA

EDGE MACH NO. = .6018		TOTAL PRESSURE = .6665E+05 N/M ²		TOTAL TEMPERATURE = 308.85 DEG-K		M = 1.426		CF = .002165	
X = 0.00 CM		DELTA STAR = .4531 CM		RE-THETA = 22400.		THETA = .3177 CM		MIN WALL = .3185 CM = 2/SEC	
UE = 204.91 M/SEC		RE-THETA = 22400.		CF = .002198		PI = .5908		DELTA = 3.1670 CM	
WE-DELTA-STAR = 31940.		Y-PLUS		YMAX = 2.095 CM		YMIN = .080 CM			
LEAST SQUARE FIT PARAMETERS		Y-THETA		M/NE		RHO/RHME		U/U _E	
UTAU = 7.0079 M/SEC		Y-PLUS		M/NE		RHO/RHME		U/U _E	
CHISON = .2022E-04		Y-THETA		M/NE		RHO/RHME		U/U _E	
Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHME	U/U _E	II-PLUS	TAU/TAU-MAX	V/U	
0.000	1.000	0.	0.0000	.9397	0.0700	0.00	1.0000	0.000000	
0.010	.001	22.	.4144	.9500	.4752	12.45	1.0000	0.000000	
0.021	.007	47.	.4862	.9539	.4978	14.59	.9983	0.000003	
0.034	.017	76.	.5360	.9570	.5279	16.07	.9945	0.000007	
0.050	.030	111.	.5640	.9589	.5769	17.89	.9973	0.000012	
0.069	.047	131.	.5843	.9604	.5942	19.55	.9965	0.000015	
0.090	.071	176.	.6012	.9615	.6131	21.99	.9948	0.000021	
0.115	.091	231.	.6170	.9626	.6289	24.46	.9924	0.000029	
0.134	.114	273.	.6315	.9642	.6402	26.06	.9905	0.000035	
0.148	.127	324.	.6448	.9651	.6605	27.30	.9878	0.000042	
0.170	.153	374.	.6584	.9655	.6719	28.57	.9845	0.000049	
0.194	.181	427.	.6704	.9660	.6820	29.73	.9827	0.000056	
0.219	.210	463.	.6806	.9668	.6920	30.83	.9809	0.000061	
0.233	.235	513.	.6873	.9673	.6974	31.79	.9789	0.000069	
0.257	.257	567.	.6900	.9681	.7000	32.63	.9769	0.000074	
0.279	.279	614.	.6974	.9680	.7087	33.42	.9721	0.000083	
0.295	.291	651.	.7024	.9694	.7134	33.96	.9699	0.000089	
0.334	.334	734.	.7085	.9699	.7104	34.14	.9644	0.000101	
0.364	.364	801.	.7143	.9708	.7240	34.43	.9593	0.000111	
0.392	.392	895.	.7304	.9719	.7413	34.79	.9546	0.000124	
0.431	.431	952.	.7345	.9715	.7373	34.81	.9500	0.000134	
0.472	.472	1036.	.7345	.9724	.7468	34.81	.9434	0.000149	
0.493	.493	1098.	.7460	.9733	.7571	34.81	.9380	0.000157	
0.530	.530	1187.	.7528	.9739	.7629	34.81	.9320	0.000172	
0.541	.541	1279.	.7528	.9738	.7629	34.81	.9244	0.000184	
0.572	.572	1369.	.7587	.9744	.7694	34.81	.9168	0.000203	
0.600	.600	1453.	.7620	.9754	.7816	34.81	.9093	0.000218	
0.604	.604	1550.	.7781	.9762	.7875	34.81	.9093	0.000234	
0.642	.642	1626.	.7759	.9760	.7853	34.81	.9022	0.000251	
0.674	.674	1704.	.7879	.9771	.7970	34.81	.8957	0.000264	
0.693	.693	1764.	.7804	.9782	.8070	34.81	.8857	0.000277	
0.714	.714	1841.	.8041	.9787	.8124	34.81	.8764	0.000294	
0.740	.740	1934.	.8058	.9788	.8165	34.81	.8677	0.000310	
0.769	.769	2029.	.8065	.9789	.8165	34.81	.8612	0.000324	
0.807	.807	2104.	.8140	.9794	.8224	34.81	.8511	0.000339	
0.837	.837	2154.	.8129	.9795	.8216	34.81	.8411	0.000349	
0.861	.861	2214.	.8209	.9799	.8300	34.81	.8355	0.000361	
0.881	.881	2274.	.8317	.9814	.8415	34.81	.8278	0.000374	
0.901	.901	2334.	.8414	.9824	.8490	34.81	.8201	0.000387	
0.921	.921	2394.	.8431	.9825	.8505	34.81	.8124	0.000400	
0.941	.941	2454.	.8475	.9830	.8547	34.81	.8047	0.000413	

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TABLE A.5. (CONT.)
M/PE BWO/BNDE

Y (CM)	V/INETA	V-PLUS	M/PE	BWO/BNDE	U/IF	IM-PLUS	TAU/TAU-WAZ	V/U
1.278	4.024	2813.	.8541	.9819	.8431	25.43	.2644	.007510
1.375	4.172	2917.	.8554	.9818	.8476	25.41	.2704	.007534
1.467	4.303	3009.	.8551	.9842	.8662	25.52	.2749	.007559
1.555	4.423	3093.	.8554	.9851	.8749	25.74	.2812	.007581
1.643	4.543	3174.	.871.	.9854	.8794	25.91	.2873	.007603
1.731	4.671	3264.	.8741	.9857	.8806	25.96	.291	.007627
1.817	4.823	3372.	.8708	.9863	.8849	26.11	.2937	.007654
1.904	4.975	3499.	.8829	.9867	.8849	26.23	.2968	.007685
1.991	5.147	3603.	.8838	.9874	.8902	26.51	.2979	.007719
2.078	5.295	3702.	.8848	.9882	.8921	26.63	.2974	.007748
2.164	5.459	3817.	.8847	.9884	.8949	26.85	.2978	.007780
2.251	5.642	3950.	.9135	.9909	.9149	27.37	.2942	.007841
2.337	5.845	4114.	.9158	.9907	.9293	27.36	.2932	.007867
2.424	6.064	4278.	.9217	.9909	.9349	27.31	.2945	.007892
2.511	6.278	4464.	.9235	.9911	.9376	27.34	.2978	.007924
2.598	6.493	4649.	.9169	.9924	.9413	27.76	.2930	.007977
2.685	6.649	4849.	.9132	.9927	.9452	27.64	.2942	.008011
2.772	6.848	5071.	.9462	.9937	.9492	28.01	.2964	.008041
2.859	7.009	5303.	.9472	.9934	.9501	28.36	.2919	.008084
2.946	7.197	5496.	.9508	.9942	.9536	28.34	.2947	.008131
3.033	7.429	5739.	.9464	.9946	.9571	28.24	.2916	.008174
3.120	7.677	5994.	.9531	.9957	.9634	28.43	.2903	.008219
3.207	7.944	6264.	.9433	.9964	.9674	28.56	.2905	.008264
3.294	8.248	6549.	.9544	.9969	.9746	28.79	.2944	.008311
3.381	8.592	6839.	.9736	.9984	.9741	28.77	.2944	.008354
3.468	8.927	7149.	.9729	.9987	.9745	28.77	.2944	.008397
3.555	9.255	7469.	.9747	.9991	.9731	28.64	.2944	.008442
3.642	9.574	7809.	.9836	.9997	.9844	29.37	.2921	.008487
3.729	9.894	8164.	.9845	.9981	.9844	29.10	.2944	.008530
3.816	10.219	8544.	.9847	.9944	.9876	29.16	.2944	.008574
3.903	10.541	8939.	.9847	.9944	.9876	29.16	.2944	.008617
3.990	10.861	9349.	.9847	.9944	.9876	29.16	.2944	.008660
4.077	11.181	9774.	.9847	.9944	.9876	29.16	.2944	.008703
4.164	11.501	10214.	.9847	.9944	.9876	29.16	.2944	.008746
4.251	11.821	10659.	.9847	.9944	.9876	29.16	.2944	.008789
4.338	12.141	11114.	.9847	.9944	.9876	29.16	.2944	.008832
4.425	12.461	11579.	.9847	.9944	.9876	29.16	.2944	.008875
4.512	12.781	12054.	.9847	.9944	.9876	29.16	.2944	.008918
4.599	13.101	12539.	.9847	.9944	.9876	29.16	.2944	.008961
4.686	13.421	13034.	.9847	.9944	.9876	29.16	.2944	.009004
4.773	13.741	13539.	.9847	.9944	.9876	29.16	.2944	.009047
4.860	14.061	14054.	.9847	.9944	.9876	29.16	.2944	.009090
4.947	14.381	14579.	.9847	.9944	.9876	29.16	.2944	.009133
5.034	14.701	15114.	.9847	.9944	.9876	29.16	.2944	.009176
5.121	15.021	15659.	.9847	.9944	.9876	29.16	.2944	.009219
5.208	15.341	16214.	.9847	.9944	.9876	29.16	.2944	.009262
5.295	15.661	16779.	.9847	.9944	.9876	29.16	.2944	.009305
5.382	15.981	17354.	.9847	.9944	.9876	29.16	.2944	.009348
5.469	16.301	17939.	.9847	.9944	.9876	29.16	.2944	.009391
5.556	16.621	18534.	.9847	.9944	.9876	29.16	.2944	.009434
5.643	16.941	19139.	.9847	.9944	.9876	29.16	.2944	.009477
5.730	17.261	19754.	.9847	.9944	.9876	29.16	.2944	.009520
5.817	17.581	20379.	.9847	.9944	.9876	29.16	.2944	.009563
5.904	17.901	21014.	.9847	.9944	.9876	29.16	.2944	.009606
5.991	18.221	21659.	.9847	.9944	.9876	29.16	.2944	.009649
6.078	18.541	22314.	.9847	.9944	.9876	29.16	.2944	.009692
6.165	18.861	22979.	.9847	.9944	.9876	29.16	.2944	.009735
6.252	19.181	23654.	.9847	.9944	.9876	29.16	.2944	.009778
6.339	19.501	24339.	.9847	.9944	.9876	29.16	.2944	.009821
6.426	19.821	25034.	.9847	.9944	.9876	29.16	.2944	.009864
6.513	20.141	25739.	.9847	.9944	.9876	29.16	.2944	.009907
6.600	20.461	26454.	.9847	.9944	.9876	29.16	.2944	.009950
6.687	20.781	27179.	.9847	.9944	.9876	29.16	.2944	.009993
6.774	21.101	27914.	.9847	.9944	.9876	29.16	.2944	.010036
6.861	21.421	28659.	.9847	.9944	.9876	29.16	.2944	.010079
6.948	21.741	29414.	.9847	.9944	.9876	29.16	.2944	.010122
7.035	22.061	30179.	.9847	.9944	.9876	29.16	.2944	.010165

Y: TMEYA

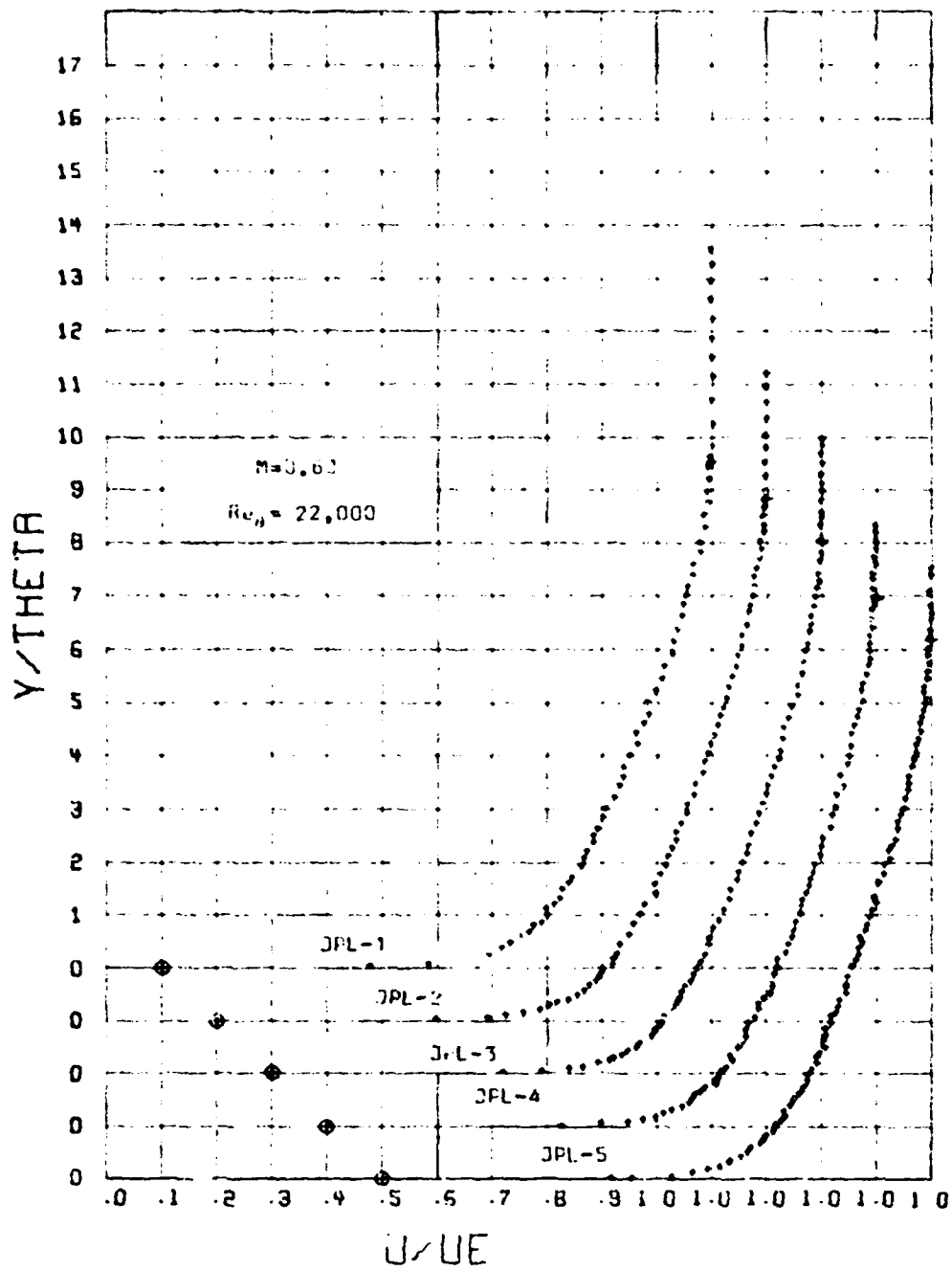


Figure A5. Mean Velocity Profiles.

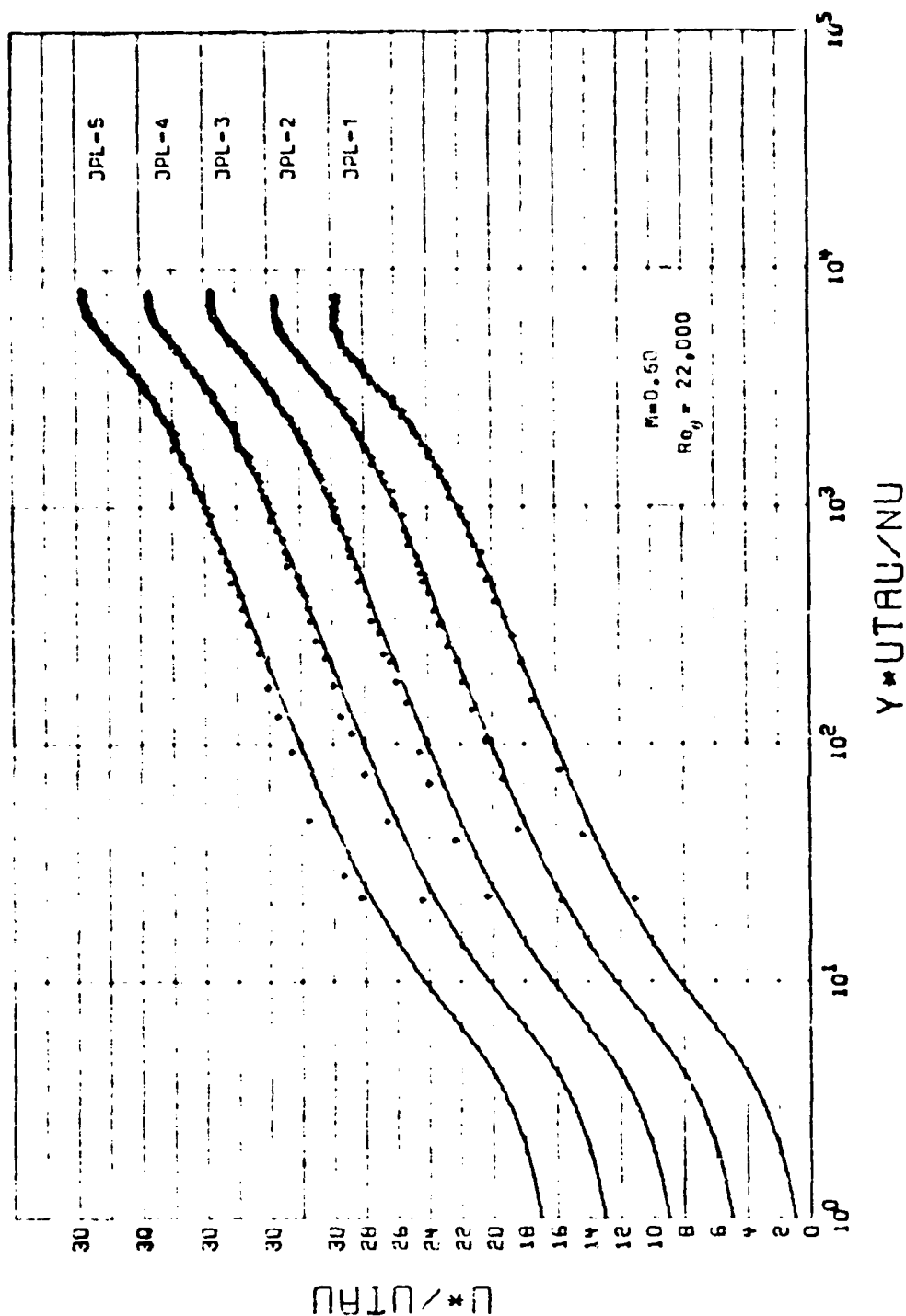


Figure A6. Van Orst Scaled Mean Velocity Profiles.

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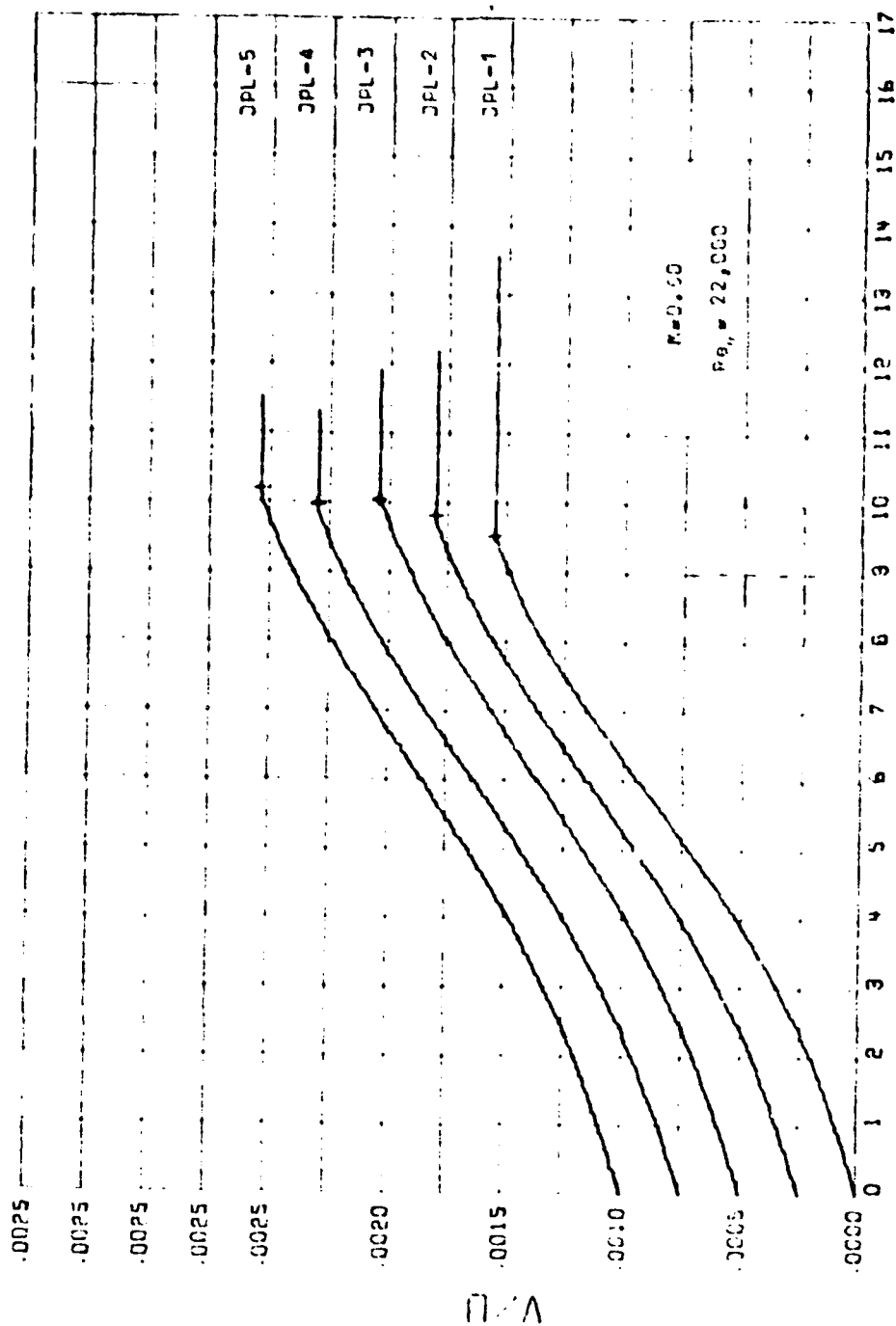


Figure A7. Normal Velocity Distribution.

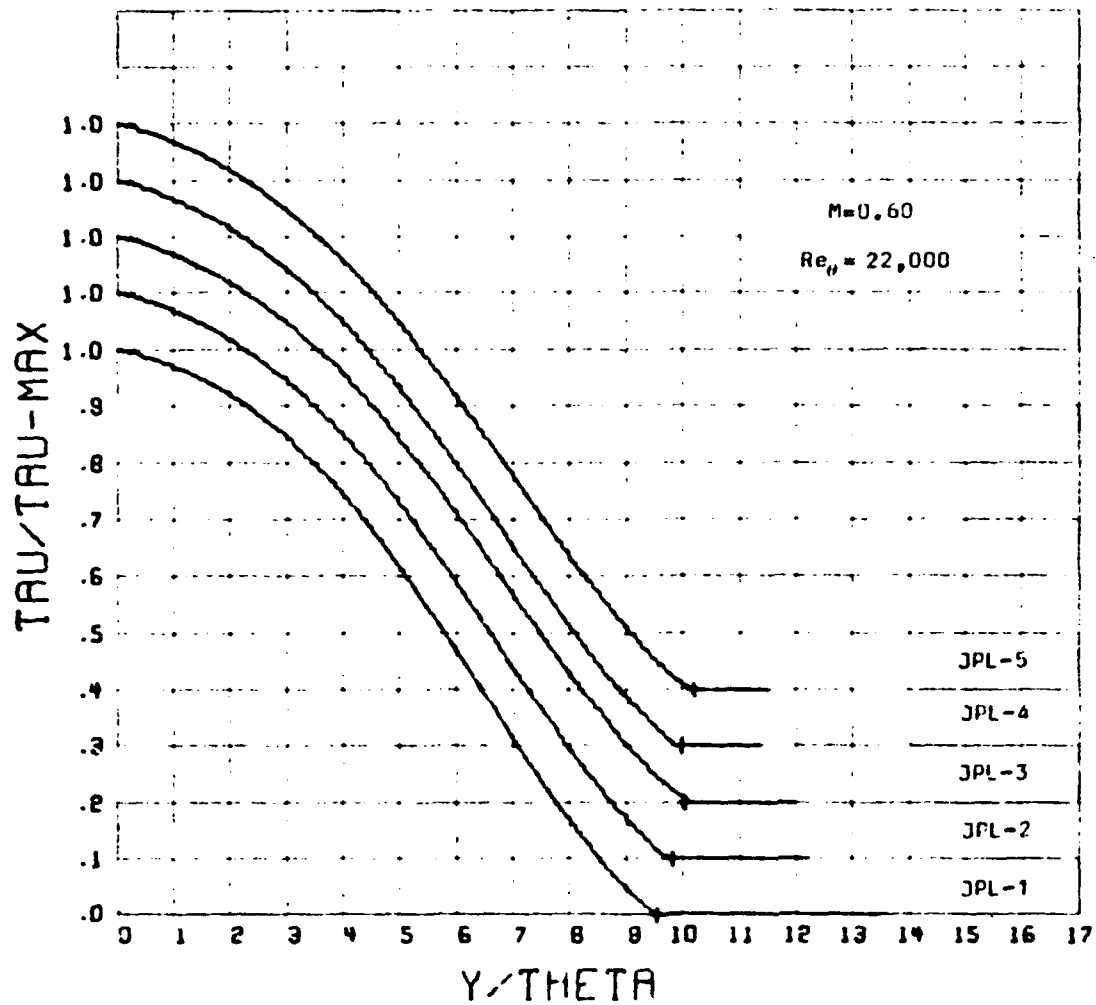


Figure A8. Shear Stress Distribution.

TABLE A 6. DATA SUMMARY

PROFILE - JPL-1 - - - PIVOT PRESSURE DATA

ENGINE MACH NO. 0.973 TOTAL PRESSURE = 1243F-04 M/MOO2
X = 48.43 CM TOTAL TEMPERATURE = 315.93 DEG-K

UE = 205.88 M/SEC		DELTA STAR = 3325 CM		THETA = .2344 CM		M = 1.418	
RE-DELTA-STAR = 44830.		RE-THETA = 31465.		NUMER = .1741 CM/SEC		DELTA = 2.4128 CM	
LEAST SQUARE FIT PARAMETERS		CS = .002090		PI = .4124			
UTIME = 0.0000 M/SEC		VMAX = 2.276 CM		VINO = .034 CM			
CHISQR = .1054E-04							
V (CM)	V/THETA	V-PLUS	M/ME	RM/RHME	U/UF	U-PLUS	TAU/TAU-MAX
0.000	0.000	0.	0.0000	.9405	0.0000	0.00	0.00000
.010	.043	10.	.4400	.9524	.4439	13.85	1.0000
.020	.087	20.	.8800	.9572	.8878	16.24	.9989
.030	.130	30.	1.3200	.9596	.8781	17.40	.9974
.040	.173	40.	1.7600	.9606	.8678	18.17	.9958
.050	.216	50.	2.2000	.9614	.8568	18.04	.9944
.060	.259	60.	2.6400	.9620	.8453	17.35	.9930
.070	.302	70.	3.0800	.9624	.8333	16.92	.9916
.080	.345	80.	3.5200	.9627	.8208	16.32	.9902
.090	.388	90.	3.9600	.9629	.8078	15.47	.9888
.100	.431	100.	4.4000	.9630	.7943	14.42	.9874
.110	.474	110.	4.8400	.9630	.7803	13.22	.9860
.120	.517	120.	5.2800	.9629	.7658	11.92	.9846
.130	.560	130.	5.7200	.9627	.7508	10.52	.9832
.140	.603	140.	6.1600	.9624	.7353	9.12	.9818
.150	.646	150.	6.6000	.9620	.7193	7.72	.9804
.160	.689	160.	7.0400	.9614	.7028	6.32	.9790
.170	.732	170.	7.4800	.9606	.6858	4.92	.9776
.180	.775	180.	7.9200	.9596	.6683	3.52	.9762
.190	.818	190.	8.3600	.9584	.6503	2.12	.9748
.200	.861	200.	8.8000	.9572	.6318	0.72	.9734
.210	.904	210.	9.2400	.9558	.6128		.9720
.220	.947	220.	9.6800	.9542	.5933		.9706
.230	.990	230.	10.1200	.9524	.5733		.9692
.240	1.033	240.	10.5600	.9506	.5528		.9678
.250	1.076	250.	11.0000	.9486	.5318		.9664
.260	1.119	260.	11.4400	.9464	.5103		.9650
.270	1.162	270.	11.8800	.9440	.4883		.9636
.280	1.205	280.	12.3200	.9414	.4658		.9622
.290	1.248	290.	12.7600	.9386	.4428		.9608
.300	1.291	300.	13.2000	.9356	.4193		.9594
.310	1.334	310.	13.6400	.9324	.3953		.9580
.320	1.377	320.	14.0800	.9290	.3708		.9566
.330	1.420	330.	14.5200	.9254	.3458		.9552
.340	1.463	340.	14.9600	.9216	.3203		.9538
.350	1.506	350.	15.4000	.9176	.2943		.9524
.360	1.549	360.	15.8400	.9134	.2678		.9510
.370	1.592	370.	16.2800	.9090	.2408		.9496
.380	1.635	380.	16.7200	.9044	.2133		.9482
.390	1.678	390.	17.1600	.9000	.1853		.9468
.400	1.721	400.	17.6000	.8954	.1568		.9454
.410	1.764	410.	18.0400	.8906	.1278		.9440
.420	1.807	420.	18.4800	.8856	.0983		.9426
.430	1.850	430.	18.9200	.8804	.0683		.9412
.440	1.893	440.	19.3600	.8750	.0378		.9398
.450	1.936	450.	19.8000	.8694	.0068		.9384
.460	1.979	460.	20.2400	.8636			.9370
.470	2.022	470.	20.6800	.8576			.9356
.480	2.065	480.	21.1200	.8514			.9342
.490	2.108	490.	21.5600	.8450			.9328
.500	2.151	500.	22.0000	.8384			.9314
.510	2.194	510.	22.4400	.8316			.9300
.520	2.237	520.	22.8800	.8246			.9286
.530	2.280	530.	23.3200	.8174			.9272
.540	2.323	540.	23.7600	.8100			.9258
.550	2.366	550.	24.2000	.8024			.9244
.560	2.409	560.	24.6400	.7946			.9230
.570	2.452	570.	25.0800	.7866			.9216
.580	2.495	580.	25.5200	.7784			.9202
.590	2.538	590.	25.9600	.7700			.9188
.600	2.581	600.	26.4000	.7614			.9174
.610	2.624	610.	26.8400	.7526			.9160
.620	2.667	620.	27.2800	.7436			.9146
.630	2.710	630.	27.7200	.7344			.9132
.640	2.753	640.	28.1600	.7250			.9118
.650	2.796	650.	28.6000	.7154			.9104
.660	2.839	660.	29.0400	.7056			.9090
.670	2.882	670.	29.4800	.6956			.9076
.680	2.925	680.	29.9200	.6854			.9062
.690	2.968	690.	30.3600	.6750			.9048
.700	3.011	700.	30.8000	.6644			.9034
.710	3.054	710.	31.2400	.6536			.9020
.720	3.097	720.	31.6800	.6426			.9006
.730	3.140	730.	32.1200	.6314			.8992
.740	3.183	740.	32.5600	.6200			.8978
.750	3.226	750.	33.0000	.6084			.8964
.760	3.269	760.	33.4400	.5966			.8950
.770	3.312	770.	33.8800	.5846			.8936
.780	3.355	780.	34.3200	.5724			.8922
.790	3.398	790.	34.7600	.5600			.8908
.800	3.441	800.	35.2000	.5474			.8894
.810	3.484	810.	35.6400	.5346			.8880
.820	3.527	820.	36.0800	.5216			.8866
.830	3.570	830.	36.5200	.5084			.8852
.840	3.613	840.	36.9600	.4950			.8838
.850	3.656	850.	37.4000	.4814			.8824
.860	3.699	860.	37.8400	.4676			.8810
.870	3.742	870.	38.2800	.4536			.8796
.880	3.785	880.	38.7200	.4394			.8782
.890	3.828	890.	39.1600	.4250			.8768
.900	3.871	900.	39.6000	.4104			.8754
.910	3.914	910.	40.0400	.3956			.8740
.920	3.957	920.	40.4800	.3806			.8726
.930	4.000	930.	40.9200	.3654			.8712
.940	4.043	940.	41.3600	.3500			.8698
.950	4.086	950.	41.8000	.3344			.8684
.960	4.129	960.	42.2400	.3186			.8670
.970	4.172	970.	42.6800	.3026			.8656
.980	4.215	980.	43.1200	.2864			.8642
.990	4.258	990.	43.5600	.2700			.8628
1.000	4.301	1000.	44.0000	.2534			.8614

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Y (CM)	V/TWETA	V-PLUS	M/ME	TABLE A. (CONT.) RMC/RMCG	U/UE	U-PLUS	TAU/TAU-MAX	V/U
1.147	4.978	4549.	.8450	.9871	.8907	24.93	.6539	.000615
1.205	5.140	4697.	.8484	.9874	.8941	27.03	.6342	.000643
1.240	5.293	4836.	.8570	.9844	.8973	27.24	.6154	.000670
1.280	5.440	4989.	.8610	.9800	.9000	27.46	.5963	.000700
1.324	5.590	5162.	.8647	.9804	.9115	27.57	.5808	.000735
1.365	5.723	5321.	.8687	.9800	.9167	27.73	.5670	.000767
1.410	5.878	5490.	.8727	.9806	.9220	27.84	.5507	.000803
1.457	6.032	5603.	.8774	.9812	.9270	28.07	.5355	.000842
1.442	6.121	5776.	.8843	.9813	.9283	28.03	.5205	.000879
1.522	6.505	5936.	.8927	.9822	.9346	28.33	.5055	.000914
1.591	6.744	6162.	.9017	.9824	.9392	28.42	.4907	.000939
1.621	6.917	6371.	.9014	.9832	.9448	28.59	.4763	.000970
1.677	7.154	6538.	.9042	.9840	.9511	28.79	.4627	.001014
1.718	7.414	6724.	.9072	.9845	.9554	28.93	.4497	.001061
1.783	7.685	6949.	.9060	.9848	.9584	29.31	.4367	.001104
1.847	7.881	7202.	.9088	.9853	.9606	29.34	.4216	.001143
1.911	8.152	7449.	.9149	.9870	.9734	29.56	.4074	.001184
1.967	8.391	7667.	.9179	.9871	.9773	29.60	.3933	.001227
2.015	8.597	7855.	.9196	.9874	.9814	29.71	.3794	.001274
2.070	8.829	8048.	.9274	.9879	.9836	29.79	.3657	.001324
2.112	9.008	8231.	.9349	.9882	.9858	29.86	.3524	.001370
2.160	9.214	8416.	.9429	.9884	.9884	29.96	.3392	.001424
2.205	9.366	8558.	.9505	.9888	.9910	29.97	.3267	.001484
2.233	9.472	8706.	.9575	.9891	.9939	30.27	.3149	.001540
2.274	9.722	8845.	.9623	.9894	.9974	30.37	.3030	.001600
2.320	9.897	8973.	.9664	.9894	.9984	30.14	.2913	.001650
2.362	10.103	9131.	.9668	.9894	.9984	30.14	.2800	.001700
2.421	10.330	9230.	.9668	.9894	.9984	30.23	.2690	.001750
2.459	10.503	9380.	.9677	.9894	.9974	30.22	.2580	.001800
2.506	10.809	9550.	.9674	.9894	.9974	30.22	.2470	.001850
2.567	11.294	10370.	1.0012	1.0001	1.0012	30.33	.2360	.001900
2.640	11.771	10756.	1.0019	1.0002	1.0019	30.35	.2250	.001950
2.706	12.183	11132.	1.0026	1.0000	1.0019	30.31	.2140	.002000
2.864	12.600	11513.	1.0003	1.0000	1.0003	30.31	.2030	.002050
3.037	12.957	11840.	1.0012	1.0001	1.0012	30.31	.1920	.002100
3.134	13.485	12231.	1.0000	.9999	1.0000	30.30	.1810	.002150
3.219	13.732	12546.	1.0003	1.0000	1.0013	30.31	.1700	.002200
3.298	14.068	12855.	1.0016	1.0001	1.0016	30.26	.1590	.002250
3.374	14.393	13152.	.9987	.9998	.9987	30.24	.1480	.002300
3.455	14.740	13464.	1.0016	1.0000	1.0000	30.31	.1370	.002350
3.531	15.065	13765.	.9964	.9999	.9964	30.29	.1260	.002400
3.614	15.433	14102.	.9940	.9997	.9940	30.26	.1150	.002450
3.709	15.824	14458.	1.0006	1.0000	1.0006	30.31	.1040	.002500

TABLE A-6. (CONT.)
WIND TUNNEL - JPL-2 - - - P-TIME PRESSURE DATA

EDGE MACH NO. = .5064		TOTAL PRESSURE = .1270506 W/SEC		TOTAL TEMPERATURE = 314.18 DEG-K		M = 1.616	
Re = 24,215 W		DELTA STAR = .3803 CM		THERM = .2680 CM		M = 1.616	
Re = 24,215 W		DE-THETA = 36335		M = 1.616		M = 1.616	
LEAST SQUARE FIT PARAMETERS		CF = .002057		DIP = .0124		DELTA = 2.7480 CM	
CF = .002057		VMAX = 2.402 CM		VMIN = .074 CM		DELTA = 2.7480 CM	
CF = .002057		VMAX = 2.402 CM		VMIN = .074 CM		DELTA = 2.7480 CM	
V (CM)	V/THETA	V-PLUS	M/WE	M/RHOF	U/WE	U-PLUS	TAU/TAU-MAX
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000000
0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.000000
0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.000000
0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.000000
0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.000000
0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.000000
0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.000000
0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.000000
0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.000000
0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.000000
0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.000000
0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.000000
0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.000000
0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.000000
0.140	0.140	0.140	0.140	0.140	0.140	0.140	0.000000
0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.000000
0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.000000
0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.000000
0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.000000
0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.000000
0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.000000
0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.000000
0.220	0.220	0.220	0.220	0.220	0.220	0.220	0.000000
0.230	0.230	0.230	0.230	0.230	0.230	0.230	0.000000
0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.000000
0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.000000
0.260	0.260	0.260	0.260	0.260	0.260	0.260	0.000000
0.270	0.270	0.270	0.270	0.270	0.270	0.270	0.000000
0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.000000
0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.000000
0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.000000
0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.000000
0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.000000
0.330	0.330	0.330	0.330	0.330	0.330	0.330	0.000000
0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.000000
0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.000000
0.360	0.360	0.360	0.360	0.360	0.360	0.360	0.000000
0.370	0.370	0.370	0.370	0.370	0.370	0.370	0.000000
0.380	0.380	0.380	0.380	0.380	0.380	0.380	0.000000
0.390	0.390	0.390	0.390	0.390	0.390	0.390	0.000000
0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.000000
0.410	0.410	0.410	0.410	0.410	0.410	0.410	0.000000
0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.000000
0.430	0.430	0.430	0.430	0.430	0.430	0.430	0.000000
0.440	0.440	0.440	0.440	0.440	0.440	0.440	0.000000
0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.000000
0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.000000
0.470	0.470	0.470	0.470	0.470	0.470	0.470	0.000000
0.480	0.480	0.480	0.480	0.480	0.480	0.480	0.000000
0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.000000
0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.000000
0.510	0.510	0.510	0.510	0.510	0.510	0.510	0.000000
0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.000000
0.530	0.530	0.530	0.530	0.530	0.530	0.530	0.000000
0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.000000
0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.000000
0.560	0.560	0.560	0.560	0.560	0.560	0.560	0.000000
0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.000000
0.580	0.580	0.580	0.580	0.580	0.580	0.580	0.000000
0.590	0.590	0.590	0.590	0.590	0.590	0.590	0.000000
0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.000000
0.610	0.610	0.610	0.610	0.610	0.610	0.610	0.000000
0.620	0.620	0.620	0.620	0.620	0.620	0.620	0.000000
0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.000000
0.640	0.640	0.640	0.640	0.640	0.640	0.640	0.000000
0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.000000
0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.000000
0.670	0.670	0.670	0.670	0.670	0.670	0.670	0.000000
0.680	0.680	0.680	0.680	0.680	0.680	0.680	0.000000
0.690	0.690	0.690	0.690	0.690	0.690	0.690	0.000000
0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.000000
0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.000000
0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.000000
0.730	0.730	0.730	0.730	0.730	0.730	0.730	0.000000
0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.000000
0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.000000
0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.000000
0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.000000
0.780	0.780	0.780	0.780	0.780	0.780	0.780	0.000000
0.790	0.790	0.790	0.790	0.790	0.790	0.790	0.000000
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.000000
0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.000000
0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.000000
0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.000000
0.840	0.840	0.840	0.840	0.840	0.840	0.840	0.000000
0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.000000
0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.000000
0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.000000
0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.000000
0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.000000
0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.000000
0.910	0.910	0.910	0.910	0.910	0.910	0.910	0.000000
0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.000000
0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.000000
0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.000000
0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.000000
0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.000000
0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.000000
0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.000000
0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.000000
1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000000

TABLE A-6. (CONT.)

V (CM)	V/TMSTA	V-PLUS	-/HF	RMH/RMSE	II/HF	II-PLUS	TAU/TMII-MAX	V/U
1.136	4.274	4272	8593	9845	8660	26.38	7410	.000473
1.158	4.346	4302	8652	9851	8717	26.56	7287	.000492
1.196	4.448	4497	8705	9856	8768	26.72	7177	.000504
1.231	4.543	4592	8766	9860	8805	26.83	7076	.000523
1.256	4.655	4716	8778	9858	8809	26.79	6938	.000543
1.282	4.769	4821	8780	9844	8820	26.94	6821	.000561
1.313	4.883	4936	8771	9834	8824	27.21	6651	.000580
1.343	4.994	5050	8760	9824	8817	27.18	6558	.000599
1.374	5.110	5174	8740	9812	8837	27.24	6412	.000620
1.400	5.237	5306	8652	9807	8804	27.45	6269	.000640
1.445	5.370	5437	8610	9808	8761	27.62	6094	.000664
1.476	5.483	5542	8600	9804	8718	27.80	5966	.000683
1.510	5.615	5676	8571	9805	8619	27.80	5796	.000704
1.546	5.704	5766	8578	9806	8524	27.83	5680	.000722
1.586	5.814	5881	8520	9801	8475	27.94	5533	.000742
1.620	5.940	6015	8476	9804	8379	28.11	5359	.000766
1.650	6.066	6159	8477	9806	8290	28.12	5208	.000786
1.681	6.177	6266	8424	9811	8265	28.26	5056	.000806
1.700	6.306	6397	8386	9818	8222	28.43	4864	.000832
1.730	6.465	6544	8363	9815	8102	28.37	4754	.000847
1.760	6.665	6714	8348	9825	8133	28.62	4654	.000873
1.791	6.863	6796	8345	9825	8100	28.42	4391	.000894
1.825	6.701	6464	8387	9829	8071	28.76	4215	.000917
1.851	6.923	6603	8330	9835	8070	28.89	4032	.000941
1.886	7.136	7122	8471	9832	8001	28.99	3861	.000963
1.912	7.350	7265	8517	9846	8063	29.07	3664	.000988
1.937	7.567	7431	8575	9846	8063	29.12	3467	.001013
1.963	7.787	7607	8603	9843	8068	29.34	3299	.001036
1.988	7.981	7731	8632	9847	8053	29.44	3159	.001058
2.013	8.131	7846	8633	9857	8054	29.47	2968	.001078
2.038	8.274	7940	8660	9860	8080	29.55	2805	.001095
2.061	8.403	8125	8676	9862	8083	29.59	2695	.001110
2.084	8.526	8276	8678	9868	8074	29.75	2502	.001133
2.107	8.647	8409	8674	9868	8074	29.76	2241	.001165
2.131	8.767	8509	8674	9874	8081	29.80	2034	.001190
2.154	8.887	8589	8685	9874	8087	29.91	1819	.001216
2.177	8.970	8655	8685	9881	8084	30.09	1571	.001246
2.200	9.074	8722	8684	9878	8084	30.09	1364	.001268
2.223	9.110	8719	8684	9884	8081	30.23	1165	.001294
2.246	9.313	8816	8691	9887	8087	30.27	964	.001319
2.269	9.446	8857	8691	9882	8084	30.28	767	.001354
2.292	9.678	8981	8697	9890	8077	30.30	589	.001362
2.315	9.870	9077	8690	9890	8077	30.37	412	.001383
2.338	10.050	9158	8676	9897	8077	30.47	260	.001400
2.361	10.234	9236	8686	9894	8059	30.42	114	.001417
2.384	10.417	9311	8679	9897	8080	30.48	0.0000	.001431
2.407	10.591	9381	8673	9894	8074	30.46	0.0000	.001451
2.430	11.139	9476	8676	9897	8077	30.47	0.0000	.001451
2.453	11.681	9577	8676	9897	8077	30.47	0.0000	.001451
2.476	12.124	9676	8685	9898	8084	30.51	0.0000	.001451
2.499	12.566	9773	8680	9897	8081	30.44	0.0000	.001451
2.522	12.938	9869	8680	9897	8081	30.44	0.0000	.001451
2.545	13.386	9964	8680	9897	8081	30.44	0.0000	.001451
2.568	13.829	10059	8680	9897	8081	30.44	0.0000	.001451
2.591	14.273	10154	8680	9897	8081	30.44	0.0000	.001451

ORIGINAL PAGE IS
OF POOR QUALITY

TABLE A. (CONT.)
PROFILE - JPL-3 - - - PITOT PRESSURE DATA

ENGINE MACH NO. = 5952		TOTAL PRESSURE = 1288E+06 N/M ²		TOTAL TEMPERATURE = 318.36 DEG-K	
X = -7.62 CM		DELTA STAR = 33048 CM		DELTA = 2.9440 CM	
U = 205.97 M/SEC		RE-TUETA = 37260.		M = 1.409	
LEAST SQUARE FIT PARAMETERS		CF = .002056		PI = .5733	
STAR = 6.0001 M/SEC		YMAX = 2.759 CM		VMIN = .033 CM	
CHISON = .0078E-05					
Y (CM)	Y/TUETA	Y-PLUS	M/PE	MMQ/RHDE	U/UE
0.000	1.000	0.	0.0000	.0400	0.0000
0.010	.034	.39	.4287	.0414	13.22
0.016	.054	.62	.4683	.0430	1.0000
0.018	.117	1.26	.5104	.0481	.9405
0.054	.104	2.00	.5474	.0613	.000002
0.074	.287	2.87	.6152	.0833	.000011
0.100	.464	4.04	.6773	.0945	.000120
0.137	.745	6.13	.7483	.1057	.000627
0.180	.966	8.13	.8187	.1205	.000730
0.192	.963	8.94	.8256	.1268	.000737
0.196	.953	8.77	.8332	.1277	.000743
0.191	.944	8.59	.8405	.1288	.000744
0.186	.934	8.39	.8485	.1299	.000744
0.174	.923	8.19	.8562	.1309	.000743
0.165	.912	7.99	.8639	.1319	.000742
0.156	.901	7.79	.8716	.1329	.000741
0.147	.890	7.59	.8792	.1339	.000740
0.138	.879	7.39	.8868	.1349	.000739
0.129	.868	7.19	.8944	.1359	.000738
0.120	.857	6.99	.9020	.1369	.000737
0.111	.846	6.79	.9096	.1379	.000736
0.102	.835	6.59	.9172	.1389	.000735
0.093	.824	6.39	.9248	.1399	.000734
0.084	.813	6.19	.9324	.1409	.000733
0.075	.802	5.99	.9400	.1419	.000732
0.066	.791	5.79	.9476	.1429	.000731
0.057	.780	5.59	.9552	.1439	.000730
0.048	.769	5.39	.9628	.1449	.000729
0.039	.758	5.19	.9704	.1459	.000728
0.030	.747	4.99	.9780	.1469	.000727
0.021	.736	4.79	.9856	.1479	.000726
0.012	.725	4.59	.9932	.1489	.000725
0.003	.714	4.39	.9999	.1499	.000724
0.000	.703	4.19	1.0000	.1509	.000723
0.000	.692	3.99	1.0000	.1519	.000722
0.000	.681	3.79	1.0000	.1529	.000721
0.000	.670	3.59	1.0000	.1539	.000720
0.000	.659	3.39	1.0000	.1549	.000719
0.000	.648	3.19	1.0000	.1559	.000718
0.000	.637	2.99	1.0000	.1569	.000717
0.000	.626	2.79	1.0000	.1579	.000716
0.000	.615	2.59	1.0000	.1589	.000715
0.000	.604	2.39	1.0000	.1599	.000714
0.000	.593	2.19	1.0000	.1609	.000713
0.000	.582	1.99	1.0000	.1619	.000712
0.000	.571	1.79	1.0000	.1629	.000711
0.000	.560	1.59	1.0000	.1639	.000710
0.000	.549	1.39	1.0000	.1649	.000709
0.000	.538	1.19	1.0000	.1659	.000708
0.000	.527	.99	1.0000	.1669	.000707
0.000	.516	.79	1.0000	.1679	.000706
0.000	.505	.59	1.0000	.1689	.000705
0.000	.494	.39	1.0000	.1699	.000704
0.000	.483	.19	1.0000	.1709	.000703
0.000	.472	0.	1.0000	.1719	.000702
0.000	.461	0.	1.0000	.1729	.000701
0.000	.450	0.	1.0000	.1739	.000700
0.000	.439	0.	1.0000	.1749	.000699
0.000	.428	0.	1.0000	.1759	.000698
0.000	.417	0.	1.0000	.1769	.000697
0.000	.406	0.	1.0000	.1779	.000696
0.000	.395	0.	1.0000	.1789	.000695
0.000	.384	0.	1.0000	.1799	.000694
0.000	.373	0.	1.0000	.1809	.000693
0.000	.362	0.	1.0000	.1819	.000692
0.000	.351	0.	1.0000	.1829	.000691
0.000	.340	0.	1.0000	.1839	.000690
0.000	.329	0.	1.0000	.1849	.000689
0.000	.318	0.	1.0000	.1859	.000688
0.000	.307	0.	1.0000	.1869	.000687
0.000	.296	0.	1.0000	.1879	.000686
0.000	.285	0.	1.0000	.1889	.000685
0.000	.274	0.	1.0000	.1899	.000684
0.000	.263	0.	1.0000	.1909	.000683
0.000	.252	0.	1.0000	.1919	.000682
0.000	.241	0.	1.0000	.1929	.000681
0.000	.230	0.	1.0000	.1939	.000680
0.000	.219	0.	1.0000	.1949	.000679
0.000	.208	0.	1.0000	.1959	.000678
0.000	.197	0.	1.0000	.1969	.000677
0.000	.186	0.	1.0000	.1979	.000676
0.000	.175	0.	1.0000	.1989	.000675
0.000	.164	0.	1.0000	.1999	.000674
0.000	.153	0.	1.0000	.2009	.000673
0.000	.142	0.	1.0000	.2019	.000672
0.000	.131	0.	1.0000	.2029	.000671
0.000	.120	0.	1.0000	.2039	.000670
0.000	.109	0.	1.0000	.2049	.000669
0.000	.098	0.	1.0000	.2059	.000668
0.000	.087	0.	1.0000	.2069	.000667
0.000	.076	0.	1.0000	.2079	.000666
0.000	.065	0.	1.0000	.2089	.000665
0.000	.054	0.	1.0000	.2099	.000664
0.000	.043	0.	1.0000	.2109	.000663
0.000	.032	0.	1.0000	.2119	.000662
0.000	.021	0.	1.0000	.2129	.000661
0.000	.010	0.	1.0000	.2139	.000660
0.000	0.	0.	1.0000	.2149	.000659
0.000	0.	0.	1.0000	.2159	.000658
0.000	0.	0.	1.0000	.2169	.000657
0.000	0.	0.	1.0000	.2179	.000656
0.000	0.	0.	1.0000	.2189	.000655
0.000	0.	0.	1.0000	.2199	.000654
0.000	0.	0.	1.0000	.2209	.000653
0.000	0.	0.	1.0000	.2219	.000652
0.000	0.	0.	1.0000	.2229	.000651
0.000	0.	0.	1.0000	.2239	.000650
0.000	0.	0.	1.0000	.2249	.000649
0.000	0.	0.	1.0000	.2259	.000648
0.000	0.	0.	1.0000	.2269	.000647
0.000	0.	0.	1.0000	.2279	.000646
0.000	0.	0.	1.0000	.2289	.000645
0.000	0.	0.	1.0000	.2299	.000644
0.000	0.	0.	1.0000	.2309	.000643
0.000	0.	0.	1.0000	.2319	.000642
0.000	0.	0.	1.0000	.2329	.000641
0.000	0.	0.	1.0000	.2339	.000640
0.000	0.	0.	1.0000	.2349	.000639
0.000	0.	0.	1.0000	.2359	.000638
0.000	0.	0.	1.0000	.2369	.000637
0.000	0.	0.	1.0000	.2379	.000636
0.000	0.	0.	1.0000	.2389	.000635
0.000	0.	0.	1.0000	.2399	.000634
0.000	0.	0.	1.0000	.2409	.000633
0.000	0.	0.	1.0000	.2419	.000632
0.000	0.	0.	1.0000	.2429	.000631
0.000	0.	0.	1.0000	.2439	.000630
0.000	0.	0.	1.0000	.2449	.000629
0.000	0.	0.	1.0000	.2459	.000628
0.000	0.	0.	1.0000	.2469	.000627
0.000	0.	0.	1.0000	.2479	.000626
0.000	0.	0.	1.0000	.2489	.000625
0.000	0.	0.	1.0000	.2499	.000624
0.000	0.	0.	1.0000	.2509	.000623
0.000	0.	0.	1.0000	.2519	.000622
0.000	0.	0.	1.0000	.2529	.000621
0.000	0.	0.	1.0000	.2539	.000620
0.000	0.	0.	1.0000	.2549	.000619
0.000	0.	0.	1.0000	.2559	.000618
0.000	0.	0.	1.0000	.2569	.000617
0.000	0.	0.	1.0000	.2579	.000616
0.000	0.	0.	1.0000	.2589	.000615
0.000	0.	0.	1.0000	.2599	.000614
0.000	0.	0.	1.0000	.2609	.000613
0.000	0.	0.	1.0000	.2619	.000612
0.000	0.	0.	1.0000	.2629	.000611
0.000	0.	0.	1.0000	.2639	.000610
0.000	0.	0.	1.0000	.2649	.000609
0.000	0.	0.	1.0000	.2659	.000608
0.000	0.	0.	1.0000	.2669	.000607
0.000	0.	0.	1.0000	.2679	.000606
0.000	0.	0.	1.0000	.2689	.000605
0.000	0.	0.	1.0000	.2699	.000604
0.000	0.	0.	1.0000	.2709	.000603
0.000	0.	0.	1.0000	.2719	.000602
0.000	0.	0.	1.0000	.2729	.000601
0.000	0.	0.	1.0000	.2739	.000600
0.000	0.	0.	1.0000	.2749	.000599
0.000	0.	0.	1.0000	.2759	.000598
0.000	0.	0.	1.0000	.2769	.000597
0.000	0.	0.	1.0000	.2779	.000596
0.000	0.	0.	1.0000	.2789	.000595
0.000	0.	0.	1.0000	.2799	.000594
0.000	0.	0.	1.0000	.2809	.000593
0.000	0.	0.	1.0000	.2819	.000592
0.000	0.	0.	1.0000	.2829	.000591
0.000	0.	0.	1.0000	.2839	.000590
0.000	0.	0.	1.0000	.2849	.000589
0.000	0.	0.	1.0000	.2859	.000588
0.000	0.	0.	1.0000	.2869	.000587
0.000	0.	0.	1.0000	.2879	.000586
0.000	0.	0.	1.0000	.2889	.000585
0.000	0.	0.	1.0000	.2899	.000584
0.000	0.	0.	1.0000	.2909	.000583
0.000	0.	0.	1.0000	.2919	.000582
0.000	0.	0.	1.0000	.2929	.000581
0.000	0.	0.	1.0000	.2939	.000580
0.000	0.	0.	1.0000	.2949	.000579
0.000	0.	0.	1.0000	.2959	.000578
0.000	0.	0.	1.0000	.2969	.000577
0.000	0.	0.	1.0000	.2979	.000576
0.000	0.	0.	1.0000	.2989	.000575
0.000	0.	0.	1.0000	.2999	.000574
0.000	0.	0.	1.0000	.3009	.000573
0.000	0.	0.	1.0000	.3019	.000572
0.000	0.	0.	1.0000	.3029	.000571
0.000	0.	0.	1.0000	.3039	.000570
0.000	0.	0.	1.0000	.3049	.000569
0.000	0.	0.	1.0000	.3059	.000568
0.000	0.	0.	1.0000	.3069	.000567
0.000	0.	0.	1.0000	.3079	.000566
0.000	0.	0.	1.0000	.3089	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
1.159	1.179	1.199	1.219	1.239	1.259	1.279	1.299	1.319	1.339	1.359	1.379	1.399	1.419	1.439	1.459	1.479	1.499	1.519	1.539	1.559	1.579	1.599	1.619	1.639	1.659	1.679	1.699	1.719	1.739	1.759	1.779	1.799	1.819	1.839	1.859	1.879	1.899	1.919	1.939	1.959	1.979	1.999	2.019	2.039	2.059	2.079	2.099	2.119	2.139	2.159	2.179	2.199	2.219	2.239	2.259	2.279	2.299	2.319	2.339	2.359	2.379	2.399	2.419	2.439	2.459	2.479	2.499	2.519	2.539	2.559	2.579	2.599	2.619	2.639	2.659	2.679	2.699	2.719	2.739	2.759	2.779	2.799	2.819	2.839	2.859	2.879	2.899	2.919	2.939	2.959	2.979	2.999	3.019	3.039	3.059	3.079	3.099	3.119	3.139	3.159	3.179	3.199	3.219	3.239	3.259	3.279	3.299	3.319	3.339	3.359	3.379	3.399	3.419	3.439	3.459	3.479	3.499	3.519	3.539	3.559	3.579	3.599	3.619	3.639	3.659	3.679	3.699	3.719	3.739	3.759	3.779	3.799	3.819	3.839	3.859	3.879	3.899	3.919	3.939	3.959	3.979	3.999	4.019	4.039	4.059	4.079	4.099	4.119	4.139	4.159	4.179	4.199	4.219	4.239	4.259	4.279	4.299	4.319	4.339	4.359	4.379	4.399	4.419	4.439	4.459	4.479	4.499	4.519	4.539	4.559	4.579	4.599	4.619	4.639	4.659	4.679	4.699	4.719	4.739	4.759	4.779	4.799	4.819	4.839	4.859	4.879	4.899	4.919	4.939	4.959	4.979	4.999	5.019	5.039	5.059	5.079	5.099	5.119	5.139	5.159	5.179	5.199	5.219	5.239	5.259	5.279	5.299	5.319	5.339	5.359	5.379	5.399	5.419	5.439	5.459	5.479	5.499	5.519	5.539	5.559	5.579	5.599	5.619	5.639	5.659	5.679	5.699	5.719	5.739	5.759	5.779	5.799	5.819	5.839	5.859	5.879	5.899	5.919	5.939	5.959	5.979	5.999	6.019	6.039	6.059	6.079	6.099	6.119	6.139	6.159	6.179	6.199	6.219	6.239	6.259	6.279	6.299	6.319	6.339	6.359	6.379	6.399	6.419	6.439	6.459	6.479	6.499	6.519	6.539	6.559	6.579	6.599	6.619	6.639	6.659	6.679	6.699	6.719	6.739	6.759	6.779	6.799	6.819	6.839	6.859	6.879	6.899	6.919	6.939	6.959	6.979	6.999	7.019	7.039	7.059	7.079	7.099	7.119	7.139	7.159	7.179	7.199	7.219	7.239	7.259	7.279	7.299	7.319	7.339	7.359	7.379	7.399	7.419	7.439	7.459	7.479	7.499	7.519	7.539	7.559	7.579	7.599	7.619	7.639	7.659	7.679	7.699	7.719	7.739	7.759	7.779	7.799	7.819	7.839	7.859	7.879	7.899	7.919	7.939	7.959	7.979	7.999	8.019	8.039	8.059	8.079	8.099	8.119	8.139	8.159	8.179	8.199	8.219	8.239	8.259	8.279	8.299	8.319	8.339	8.359	8.379	8.399	8.419	8.439	8.459	8.479	8.499	8.519	8.539	8.559	8.579	8.599	8.619	8.639	8.659	8.679	8.699	8.719	8.739	8.759	8.779	8.799	8.819	8.839	8.859	8.879	8.899	8.919	8.939	8.959	8.979	8.999	9.019	9.039	9.059	9.079	9.099	9.119	9.139	9.159	9.179	9.199	9.219	9.239	9.259	9.279	9.299	9.319	9.339	9.359	9.379	9.399	9.419	9.439	9.459	9.479	9.499	9.519	9.539	9.559	9.579	9.599	9.619	9.639	9.659	9.679	9.699	9.719	9.739	9.759	9.779	9.799	9.819	9.839	9.859	9.879	9.899	9.919	9.939	9.959	9.979	9.999	10.019	10.039	10.059	10.079	10.099	10.119	10.139	10.159	10.179	10.199	10.219	10.239	10.259	10.279	10.299	10.319	10.339	10.359	10.379	10.399	10.419	10.439	10.459	10.479	10.499	10.519	10.539	10.559	10.579	10.599	10.619	10.639	10.659	10.679	10.699	10.719	10.739	10.759	10.779	10.799	10.819	10.839	10.859	10.879	10.899	10.919	10.939	10.959	10.979	10.999	11.019	11.039	11.059	11.079	11.099	11.119	11.139	11.159	11.179	11.199	11.219	11.239	11.259	11.279	11.299	11.319	11.339	11.359	11.379	11.399	11.419	11.439	11.459	11.479	11.499	11.519	11.539	11.559	11.579	11.599	11.619	11.639	11.659	11.679	11.699	11.719	11.739	11.759	11.779	11.799	11.819	11.839	11.859	11.879	11.899	11.919	11.939	11.959	11.979	11.999	12.019	12.039	12.059	12.079	12.099	12.119	12.139	12.159	12.179	12.199	12.219	12.239	12.259	12.279	12.299	12.319	12.339	12.359	12.379	12.399	12.419	12.439	12.459	12.479	12.499	12.519	12.539	12.559	12.579	12.599	12.619	12.639	12.659	12.679	12.699	12.719	12.739	12.759	12.779	12.799	12.819	12.839	12.859	12.879	12.899	12.919	12.939	12.959	12.979	12.999	13.019	13.039	13.059	13.079	13.099	13.119	13.139	13.159	13.179	13.199	13.219	13.239	13.259	13.279	13.299	13.319	13.339	13.359	13.379	13.399	13.419	13.439	13.459	13.479	13.499	13.519	13.539	13.559	13.579	13.599	13.619	13.639	13.659	13.679	13.699	13.719	13.739	13.759	13.779	13.799	13.819	13.839	13.859	13.879	13.899	13.919	13.939	13.959	13.979	13.999	14.019	14.039	14.059	14.079	14.099	14.119	14.139	14.159	14.179	14.199	14.219	14.239	14.259	14.279	14.299	14.319	14.339	14.359	14.379	14.399	14.419	14.439	14.459	14.479	14.499	14.519	14.539	14.559	14.579	14.599	14.619	14.639	14.659	14.679	14.699	14.719	14.739	14.759	14.779	14.799	14.819	14.839	14.859	14.879	14.899	14.919	14.939	14.959	14.979	14.999	15.019	15.039	15.059	15.079	15.099	15.119	15.139	15.159	15.179	15.199	15.219	15.239	15.259	15.279	15.299	15.319	15.339	15.359	15.379	15.399	15.419	15.439	15.459	15.479	15.499	15.519	15.539	15.559	15.579	15.599	15.619	15.639	15.659	15.679	15.699	15.719	15.739	15.759	15.779	15.799	15.819	15.839	15.859	15.879	15.899	15.919	15.939	15.959	15.979	15.999	16.019	16.039	16.059	16.079	16.099	16.119	16.139	16.159	16.179	16.199	16.219	16.239	16.259	16.279	16.299	16.319	16.339	16.359	16.379	16.399	16.419	16.439	16.459	16.479	16.499	16.519	16.539	16.559	16.579	16.599	16.619	16.639	16.659	16.679	16.699	16.719	16.739	16.759	16.779	16.799	16.819	16.839	16.859	16.879	16.899	16.919	16.939	16.959	16.979	16.999	17.019	17.039	17.059	17.079	17.099	17.119	17.139	17.159	17.179	17.199	17.219	17.239	17.259	17.279	17.299	17.319	17.339	17.359	17.379	17.399	17.419	17.439	17.459	17.479	17.499	17.519	17.539	17.559	17.579	17.599	17.619	17.639	17.659	17.679	17.699	17.719	17.739	17.759	17.779	17.799	17.819	17.839	17.859	17.879	17.899	17.919	17.939	17.959	17.979	17.999	18.019	18.039	18.059	18.079	18.099	18.119	18.139	18.159	18.179	18.199	18.219	18.239	18.259	18.279	18.299	18.319	18.339	18.359	18.379	18.399	18.419	18.439	18.459	18.479	18.499	18.519	18.539	18.559	18.579	18.599	18.619	18.639	18.659	18.679	18.699	18.719	18.739	18.759	18.779	18.799	18.819	18.839	18.859	18.879	18.899	18.919	18.939	18.959	18.979	18.999	19.019	19.039	19.059	19.079	19.099	19.119	19.139	19.159	19.179	19.199	19.219	19.239	19.259	19.279	19.299	19.319	19.339	19.359	19.379	19.399	19.419	19.439	19.459	19.479	19.499	19.519	19.539	19.559	19.579	19.599	19.619	19.639	19.659	19.679	19.699	19.719	19.739	19.759	19.779	19.799	19.819	19.839	19.859	19.879	19.899	19.919	19.939	19.959	19.979	19.999	20.019	20.039	20.059	20.079	20.099	20.119	20.139	20.159	20.179	20.199	20.219	20.239	20.259	20.279	20.299	20.319	20.339	20.359	20.379	20.399	20.419	20.439	20.459	20.479	20.499	20.519	20.539	20.559	20.579	20.599	20.619	20.639	20.659	20.679	20.699	20.719	20.739	20.759	20.779	20.799	20.819	20.839	20.859	20.879	20.899	20.919	20.939	20.959	20.979	20.999	21.019	21.039	21.059	21.079	21.099	21.119	21.139	21.159	21.179	21.199	21.219	21.239	21.259	21.279	21.299	21.319	21.339	21.359	21.379	21.399	21.419	21.439	21.459	21.479	21.499	21.519	21.539	21.559	21.579	21.599	21.619	21.639	21.659	21.679	21.699	21.719	21.739	21.759	21.779	21.799	21.819	21.839	21.859	21.879	21.899	21.919	21.939	21.959	21.979	21.999	22.019	22.039	22.059	22.079	22.099	22.119	22.139	22.159	22.179	22.199	22.219	22.239	22.259	22.279	22.299	22.319	22.339	22.359	22.379	22.399	22.419	22.439	22.459	22.479	22.499	22.519	22.539	22.559	22.579	22.599	22.619	22.639	22.659	22.679	22.699	22.719	22.739	22.759	22.779	22.799	22.819	22.839	22.859	22.879	22.899	22.919	22.939	22.959	22.979	22.999	23.019	23.039	23.0

[illegible][illegible][illegible]

ORIGINAL, PAGE IS
OF POOR QUALITY

V (CM)	V (M/S)	TABLE 4.4. (Cont.) m/sec	W/F	U-PLUS	TAU/TAU-MAX	V/U
1.340	6.328	.0191	.4850	26.92	.4949	.000536
1.347	6.345	.0012	.4837	26.99	.4947	.000504
1.353	6.362	.0009	.4824	27.07	.4945	.000507
1.359	6.379	.0013	.4811	27.14	.4943	.000510
1.365	6.396	.0014	.4798	27.22	.4941	.000512
1.371	6.413	.0015	.4785	27.30	.4939	.000514
1.377	6.430	.0016	.4772	27.38	.4937	.000516
1.383	6.447	.0017	.4759	27.46	.4935	.000518
1.389	6.464	.0018	.4746	27.54	.4933	.000520
1.395	6.481	.0019	.4733	27.62	.4931	.000522
1.401	6.498	.0020	.4720	27.70	.4929	.000524
1.407	6.515	.0021	.4707	27.78	.4927	.000526
1.413	6.532	.0022	.4694	27.86	.4925	.000528
1.419	6.549	.0023	.4681	27.94	.4923	.000530
1.425	6.566	.0024	.4668	28.02	.4921	.000532
1.431	6.583	.0025	.4655	28.10	.4919	.000534
1.437	6.600	.0026	.4642	28.18	.4917	.000536
1.443	6.617	.0027	.4629	28.26	.4915	.000538
1.449	6.634	.0028	.4616	28.34	.4913	.000540
1.455	6.651	.0029	.4603	28.42	.4911	.000542
1.461	6.668	.0030	.4590	28.50	.4909	.000544
1.467	6.685	.0031	.4577	28.58	.4907	.000546
1.473	6.702	.0032	.4564	28.66	.4905	.000548
1.479	6.719	.0033	.4551	28.74	.4903	.000550
1.485	6.736	.0034	.4538	28.82	.4901	.000552
1.491	6.753	.0035	.4525	28.90	.4899	.000554
1.497	6.770	.0036	.4512	28.98	.4897	.000556
1.503	6.787	.0037	.4499	29.06	.4895	.000558
1.509	6.804	.0038	.4486	29.14	.4893	.000560
1.515	6.821	.0039	.4473	29.22	.4891	.000562
1.521	6.838	.0040	.4460	29.30	.4889	.000564
1.527	6.855	.0041	.4447	29.38	.4887	.000566
1.533	6.872	.0042	.4434	29.46	.4885	.000568
1.539	6.889	.0043	.4421	29.54	.4883	.000570
1.545	6.906	.0044	.4408	29.62	.4881	.000572
1.551	6.923	.0045	.4395	29.70	.4879	.000574
1.557	6.940	.0046	.4382	29.78	.4877	.000576
1.563	6.957	.0047	.4369	29.86	.4875	.000578
1.569	6.974	.0048	.4356	29.94	.4873	.000580
1.575	6.991	.0049	.4343	30.02	.4871	.000582
1.581	7.008	.0050	.4330	30.10	.4869	.000584
1.587	7.025	.0051	.4317	30.18	.4867	.000586
1.593	7.042	.0052	.4304	30.26	.4865	.000588
1.599	7.059	.0053	.4291	30.34	.4863	.000590
1.605	7.076	.0054	.4278	30.42	.4861	.000592
1.611	7.093	.0055	.4265	30.50	.4859	.000594
1.617	7.110	.0056	.4252	30.58	.4857	.000596
1.623	7.127	.0057	.4239	30.66	.4855	.000598
1.629	7.144	.0058	.4226	30.74	.4853	.000600
1.635	7.161	.0059	.4213	30.82	.4851	.000602
1.641	7.178	.0060	.4200	30.90	.4849	.000604
1.647	7.195	.0061	.4187	30.98	.4847	.000606
1.653	7.212	.0062	.4174	31.06	.4845	.000608
1.659	7.229	.0063	.4161	31.14	.4843	.000610
1.665	7.246	.0064	.4148	31.22	.4841	.000612
1.671	7.263	.0065	.4135	31.30	.4839	.000614
1.677	7.280	.0066	.4122	31.38	.4837	.000616
1.683	7.297	.0067	.4109	31.46	.4835	.000618
1.689	7.314	.0068	.4096	31.54	.4833	.000620
1.695	7.331	.0069	.4083	31.62	.4831	.000622
1.701	7.348	.0070	.4070	31.70	.4829	.000624
1.707	7.365	.0071	.4057	31.78	.4827	.000626
1.713	7.382	.0072	.4044	31.86	.4825	.000628
1.719	7.399	.0073	.4031	31.94	.4823	.000630
1.725	7.416	.0074	.4018	32.02	.4821	.000632
1.731	7.433	.0075	.4005	32.10	.4819	.000634
1.737	7.450	.0076	.3992	32.18	.4817	.000636
1.743	7.467	.0077	.3979	32.26	.4815	.000638
1.749	7.484	.0078	.3966	32.34	.4813	.000640
1.755	7.501	.0079	.3953	32.42	.4811	.000642
1.761	7.518	.0080	.3940	32.50	.4809	.000644
1.767	7.535	.0081	.3927	32.58	.4807	.000646
1.773	7.552	.0082	.3914	32.66	.4805	.000648
1.779	7.569	.0083	.3901	32.74	.4803	.000650
1.785	7.586	.0084	.3888	32.82	.4801	.000652
1.791	7.603	.0085	.3875	32.90	.4799	.000654
1.797	7.620	.0086	.3862	32.98	.4797	.000656
1.803	7.637	.0087	.3849	33.06	.4795	.000658
1.809	7.654	.0088	.3836	33.14	.4793	.000660
1.815	7.671	.0089	.3823	33.22	.4791	.000662
1.821	7.688	.0090	.3810	33.30	.4789	.000664
1.827	7.705	.0091	.3797	33.38	.4787	.000666
1.833	7.722	.0092	.3784	33.46	.4785	.000668
1.839	7.739	.0093	.3771	33.54	.4783	.000670
1.845	7.756	.0094	.3758	33.62	.4781	.000672
1.851	7.773	.0095	.3745	33.70	.4779	.000674
1.857	7.790	.0096	.3732	33.78	.4777	.000676
1.863	7.807	.0097	.3719	33.86	.4775	.000678
1.869	7.824	.0098	.3706	33.94	.4773	.000680
1.875	7.841	.0099	.3693	34.02	.4771	.000682
1.881	7.858	.0100	.3680	34.10	.4769	.000684
1.887	7.875	.0101	.3667	34.18	.4767	.000686
1.893	7.892	.0102	.3654	34.26	.4765	.000688
1.899	7.909	.0103	.3641	34.34	.4763	.000690
1.905	7.926	.0104	.3628	34.42	.4761	.000692
1.911	7.943	.0105	.3615	34.50	.4759	.000694
1.917	7.960	.0106	.3602	34.58	.4757	.000696
1.923	7.977	.0107	.3589	34.66	.4755	.000698
1.929	7.994	.0108	.3576	34.74	.4753	.000700
1.935	8.011	.0109	.3563	34.82	.4751	.000702
1.941	8.028	.0110	.3550	34.90	.4749	.000704
1.947	8.045	.0111	.3537	34.98	.4747	.000706
1.953	8.062	.0112	.3524	35.06	.4745	.000708
1.959	8.079	.0113	.3511	35.14	.4743	.000710
1.965	8.096	.0114	.3498	35.22	.4741	.000712
1.971	8.113	.0115	.3485	35.30	.4739	.000714
1.977	8.130	.0116	.3472	35.38	.4737	.000716
1.983	8.147	.0117	.3459	35.46	.4735	.000718
1.989	8.164	.0118	.3446	35.54	.4733	.000720
1.995	8.181	.0119	.3433	35.62	.4731	.000722
2.001	8.198	.0120	.3420	35.70	.4729	.000724
2.007	8.215	.0121	.3407	35.78	.4727	.000726
2.013	8.232	.0122	.3394	35.86	.4725	.000728
2.019	8.249	.0123	.3381	35.94	.4723	.000730
2.025	8.266	.0124	.3368	36.02	.4721	.000732
2.031	8.283	.0125	.3355	36.10	.4719	.000734
2.037	8.300	.0126	.3342	36.18	.4717	.000736
2.043	8.317	.0127	.3329	36.26	.4715	.000738
2.049	8.334	.0128	.3316	36.34	.4713	.000740
2.055	8.351	.0129	.3303	36.42	.4711	.000742
2.061	8.368	.0130	.3290	36.50	.4709	.000744
2.067	8.385	.0131	.3277	36.58	.4707	.000746
2.073	8.402	.0132	.3264	36.66	.4705	.000748
2.079	8.419	.0133	.3251	36.74	.4703	.000750
2.085	8.436	.0134	.3238	36.82	.4701	.000752
2.091	8.453	.0135	.3225	36.90	.4699	.000754
2.097	8.470	.0136	.3212	36.98	.4697	.000756
2.103	8.487	.0137	.3199	37.06	.4695	.000758
2.109	8.504	.0138	.3186	37.14	.4693	.000760
2.115	8.521	.0139	.3173	37.22	.4691	.000762
2.121	8.538	.0140	.3160	37.30	.4689	.000764
2.127	8.555	.0141	.3147	37.38	.4687	.000766
2.133	8.572	.0142	.3134	37.46	.4685	.000768
2.139	8.589	.0143	.3121	37.54	.4683	.000770
2.145	8.606	.0144	.3108	37.62	.4681	.000772
2.151	8.623	.0145	.3095	37.70	.4679	.000774
2.157	8.640	.0146	.3082	37.78	.4677	.000776
2.163	8.657	.0147	.3069	37.86	.4675	.000778
2.169	8.674	.0148	.3056	37.94	.4673	.000780
2.175	8.691	.0149	.3043	38.02	.4671	.000782
2.181	8.708	.0150	.3030	38.10	.4669	.000784
2.187	8.725	.0151	.3017	38.18	.4667	.000786
2.193	8.742	.0152	.3004	38.26	.4665	.000788
2.199	8.759	.0153	.2991	38.34	.4663	.000790
2.205	8.776	.0154	.2978	38.42	.4661	.000792
2.211	8.793	.0155	.2965	38.50	.4659	.000794
2.217	8.810	.0156	.2952	38.58	.4657	.000796
2.223	8.827	.0157	.2939	38.66	.4655	.000798
2.229	8.844	.0158	.2926	38.74	.4653	.000800
2.235	8.861	.0159	.2913	38.82	.4651	.000802
2.241	8.878	.0160	.2900	38.90	.4649	.000804
2.247	8.895	.0161	.2887	38.98	.4647	.000806
2.253	8.912	.0162	.2874	39.06	.4645	.000808
2.259	8.929	.0163	.2861	39.14	.4643	.000810
2.265	8.946	.0164	.2848	39.22	.4641	.000812
2.271	8.963	.0165	.2835	39.30	.4639	.000814
2.277	8.980	.0166	.2822	39.38	.4637	.000816
2.283	8.997	.0167	.2809	39.46	.4635	.000818
2.289	9.014	.0168	.2796	39.54	.4633	.000820
2.295	9.031	.0169	.2783	39.62	.4631	.000822
2.301	9.048	.0170	.2770	39.70	.4629	.000824
2.307	9.065	.0171	.2757	39.78	.4627	.000826
2.313	9.082	.0172	.2744	39.86	.4625	.000828
2.319	9.099	.0173	.2731	39.94	.4623	.000830
2.325	9.116	.0174	.2718	40.02	.4621	.000832
2.331	9.133	.0175	.2705	40.10	.4619	.000834
2.337	9.150	.0176	.2692	40.18	.4617	.000836
2.343	9.167	.0177	.2679	40.26		

TABLE A. 6. (Cont.)
R/mg

Y (cm)	V/Tmg14	V-PLUS	U/mg	U-PLUS	TAU/TAU-MAX	V/U
1.375	0.579	5177	.0319	24.87	.7005	.005511
1.426	0.563	5111	.0376	27.03	.6918	.005537
1.480	0.555	5060	.0455	27.27	.6883	.005571
1.533	0.547	5001	.0512	27.41	.6865	.005594
1.592	0.537	4936	.0556	27.57	.6827	.005627
1.646	0.527	4861	.0599	27.71	.6815	.005651
1.705	0.517	4790	.0622	27.77	.6840	.005682
1.766	0.506	4716	.0649	27.97	.6869	.005709
1.826	0.496	4640	.0676	28.18	.6886	.005737
1.886	0.486	4565	.0706	28.15	.6759	.005767
1.945	0.476	4490	.0736	28.32	.6870	.005792
2.005	0.466	4415	.0767	28.56	.6847	.005822
2.065	0.456	4340	.0797	28.79	.6867	.005846
2.125	0.446	4265	.0826	28.76	.6887	.005869
2.185	0.436	4190	.0856	28.66	.6754	.005894
2.245	0.426	4115	.0886	28.91	.6879	.005933
2.305	0.416	4040	.0916	28.22	.6704	.005956
2.365	0.406	3965	.0946	28.27	.6597	.005982
2.425	0.396	3890	.0976	28.36	.6633	.006007
2.485	0.386	3815	.1006	28.50	.6705	.006031
2.545	0.376	3740	.1036	28.55	.6651	.006052
2.605	0.366	3665	.1066	28.94	.6677	.006077
2.665	0.356	3590	.1096	28.75	.6621	.006102
2.725	0.346	3515	.1126	28.91	.6613	.006128
2.785	0.336	3440	.1156	28.93	.6777	.006151
2.845	0.326	3365	.1186	30.00	.6765	.006173
2.905	0.316	3290	.1216	30.05	.6801	.006196
2.965	0.306	3215	.1246	30.17	.6839	.006214
3.025	0.296	3140	.1276	30.33	.6874	.006237
3.085	0.286	3065	.1306	30.37	.6841	.006256
3.145	0.276	2990	.1336	30.45	.6800	.006273
3.205	0.266	2915	.1366	30.79	.6847	.006295
3.265	0.256	2840	.1396	30.53	.6804	.006307
3.325	0.246	2765	.1426	30.42	.6753	.006324
3.385	0.236	2690	.1456	30.43	.6629	.006336
3.445	0.226	2615	.1486	30.64	.6664	.006356
3.505	0.216	2540	.1516	30.61	.6739	.006385
3.565	0.206	2465	.1546	30.74	.6714	.006404
3.625	0.196	2390	.1576	30.96	.6847	.006409
3.685	0.186	2315	.1606	30.62	.6800	.006412
3.745	0.176	2240	.1636	30.67	.6800	.006412
3.805	0.166	2165	.1666	30.67	.6800	.006412
3.865	0.156	2090	.1696	30.67	.6800	.006412
3.925	0.146	2015	.1726	30.67	.6800	.006412
3.985	0.136	1940	.1756	30.67	.6800	.006412
4.045	0.126	1865	.1786	30.67	.6800	.006412
4.105	0.116	1790	.1816	30.67	.6800	.006412
4.165	0.106	1715	.1846	30.67	.6800	.006412
4.225	0.096	1640	.1876	30.67	.6800	.006412
4.285	0.086	1565	.1906	30.67	.6800	.006412
4.345	0.076	1490	.1936	30.67	.6800	.006412
4.405	0.066	1415	.1966	30.67	.6800	.006412
4.465	0.056	1340	.1996	30.67	.6800	.006412
4.525	0.046	1265	.2026	30.67	.6800	.006412
4.585	0.036	1190	.2056	30.67	.6800	.006412
4.645	0.026	1115	.2086	30.67	.6800	.006412
4.705	0.016	1040	.2116	30.67	.6800	.006412
4.765	0.006	965	.2146	30.67	.6800	.006412
4.825	0.000	890	.2176	30.67	.6800	.006412
4.885	0.000	815	.2206	30.67	.6800	.006412
4.945	0.000	740	.2236	30.67	.6800	.006412
5.005	0.000	665	.2266	30.67	.6800	.006412
5.065	0.000	590	.2296	30.67	.6800	.006412
5.125	0.000	515	.2326	30.67	.6800	.006412
5.185	0.000	440	.2356	30.67	.6800	.006412
5.245	0.000	365	.2386	30.67	.6800	.006412
5.305	0.000	290	.2416	30.67	.6800	.006412
5.365	0.000	215	.2446	30.67	.6800	.006412
5.425	0.000	140	.2476	30.67	.6800	.006412
5.485	0.000	65	.2506	30.67	.6800	.006412
5.545	0.000	0	.2536	30.67	.6800	.006412

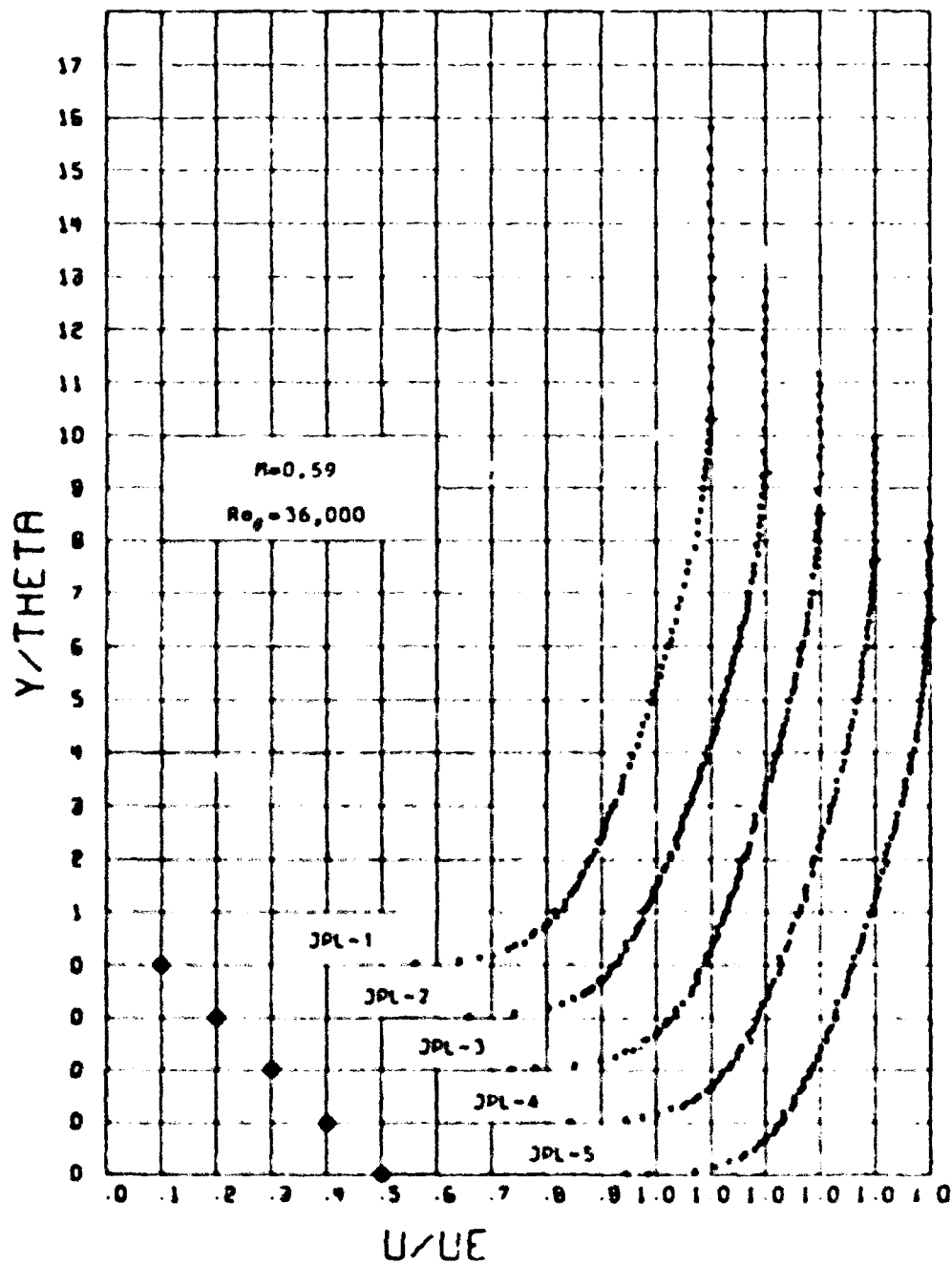
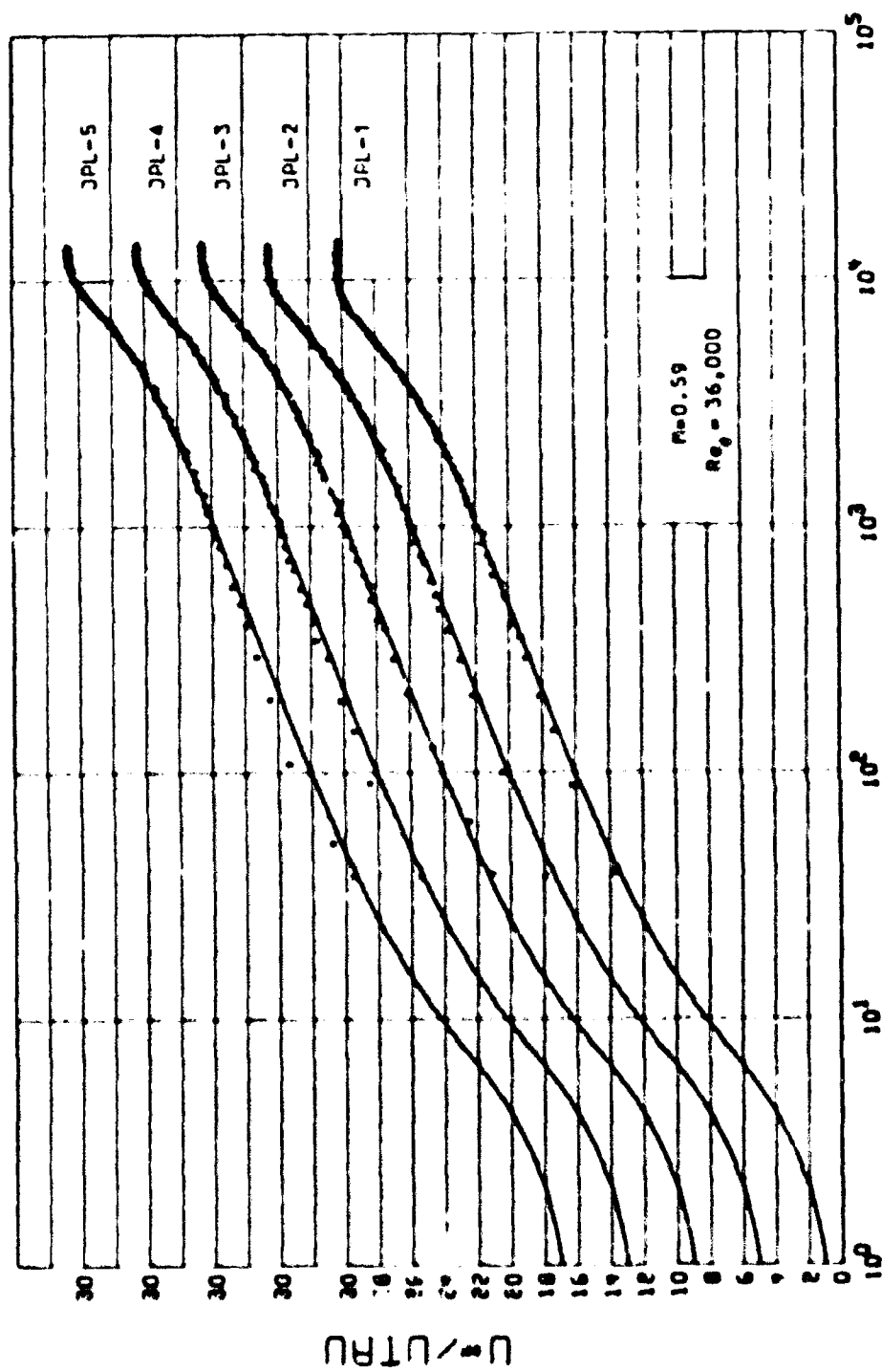


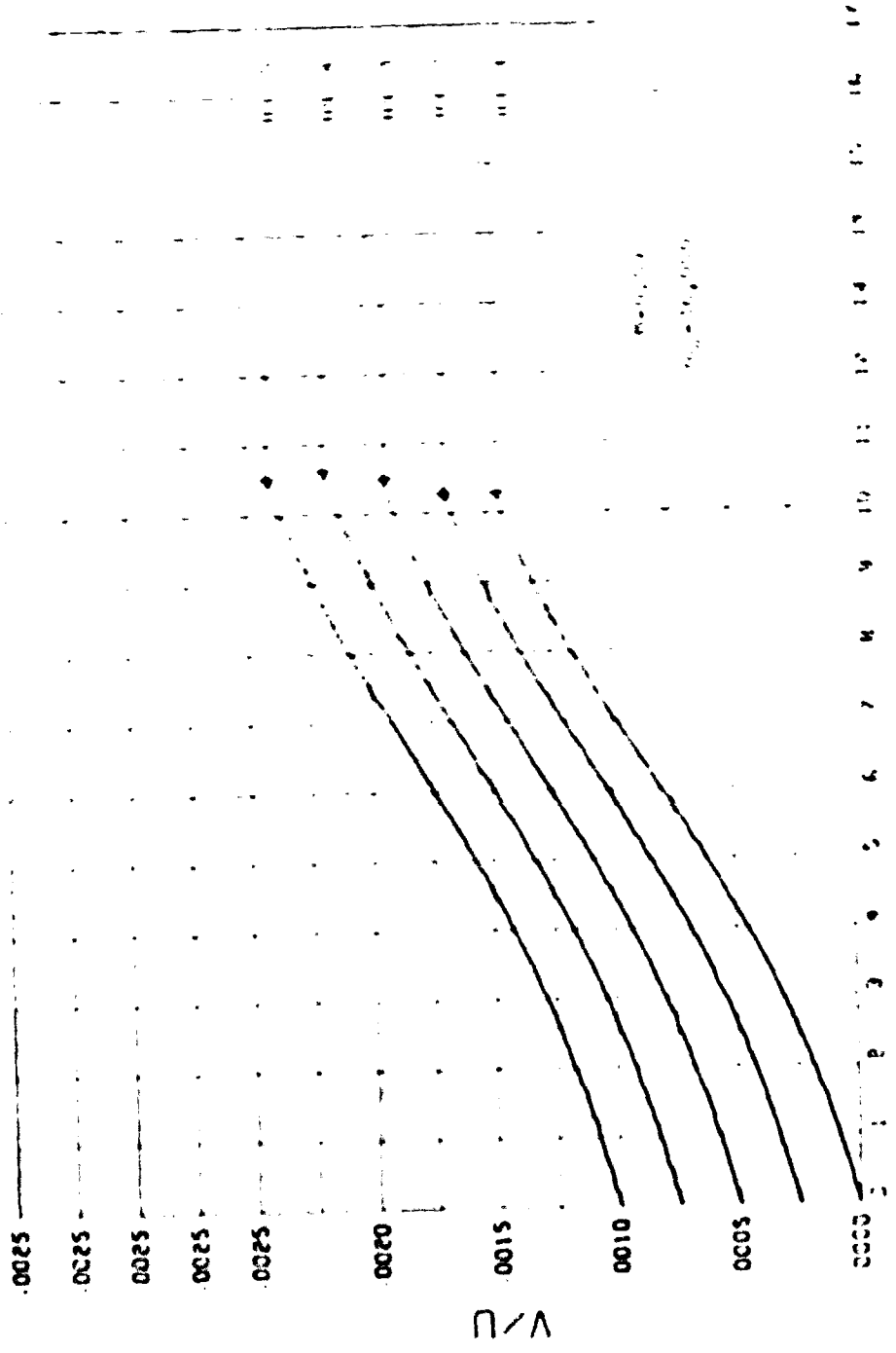
Figure A9. Mean Velocity Profiles.



$$Y^*UTAU/NU$$

Figure A10. Van Orist Scaled Mean Velocity Profiles.

ALL DATA



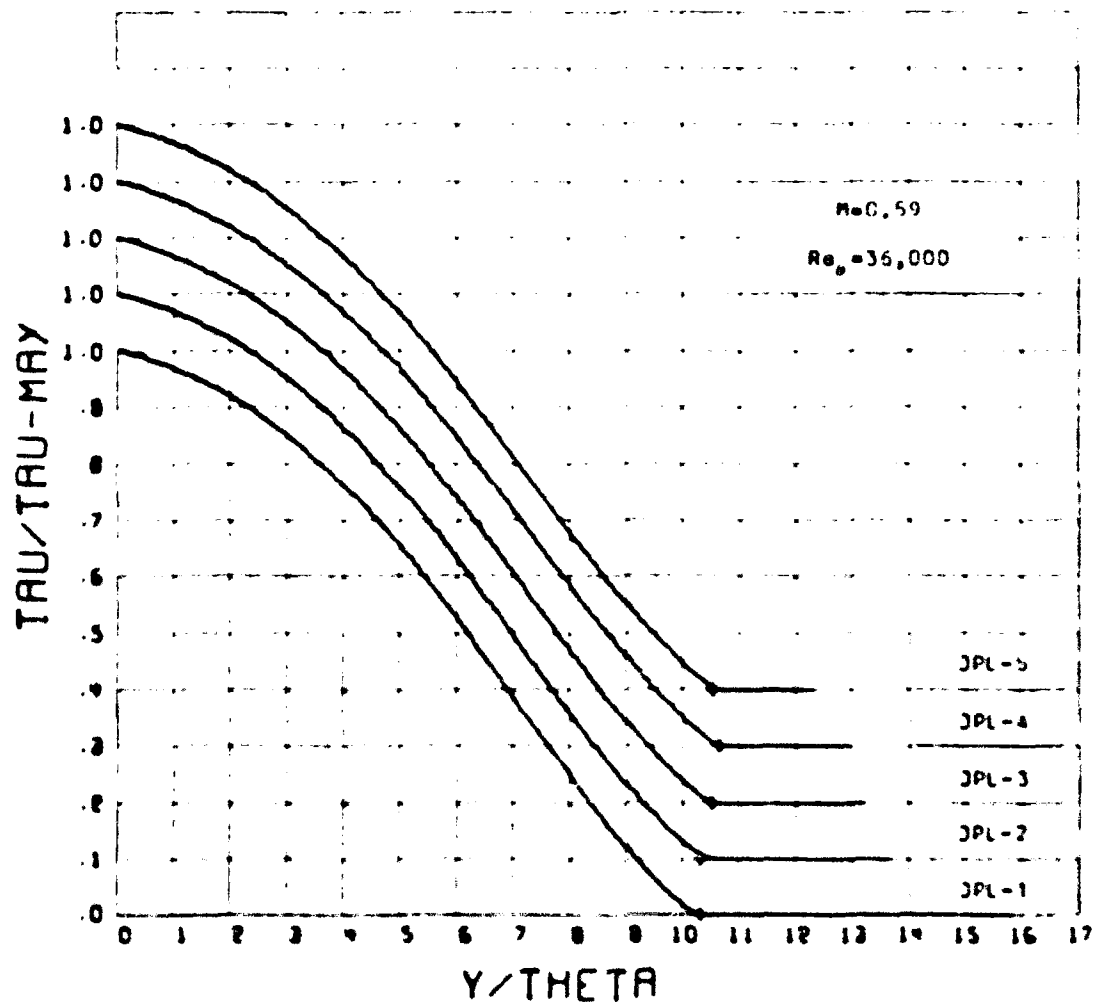


Figure A12. Shear Stress Distribution.

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0-930 68°W 6' + 5011700001 10101
1000/m 50-1165° 0.3W 15.5m 10101

0361° 0.20 m 2000 2000

[illegible]

TABLE 6.7. (Cont.)					
W/F	W-PLUS	U/WE	U-PLUS	TAU/TAU-MAX	V/U
1.326	0.537	0.903	27.59	.4231	.001049
1.346	0.582	.9371	27.78	.3450	.001105
1.361	0.634	.9642	28.03	.3558	.001147
1.373	1.146	.9846	28.12	.3251	.001191
1.380	1.316	.9956	28.29	.3058	.001214
1.388	1.446	.9972	28.37	.2886	.001260
1.396	1.616	.9987	28.64	.2550	.001320
1.405	0.736	.9979	28.77	.2051	.001358
1.415	0.716	.9966	28.86	.1788	.001394
1.421	0.716	.9952	28.86	.1788	.001394
1.426	0.716	.9940	29.04	.1461	.001425
1.432	0.716	.9926	29.11	.1350	.001444
1.438	0.716	.9911	29.11	.1048	.001494
1.445	0.696	.9897	29.17	.0839	.001527
1.456	0.669	.9883	29.20	.0695	.001541
1.464	0.639	.9867	29.21	.0474	.001571
1.470	0.616	.9852	29.28	.0289	.001595
1.476	0.592	.9838	29.38	.0187	.001619
1.480	0.569	.9824	29.40	0.0000	.001633
1.485	0.545	.9811	29.41	0.0000	.001633
1.490	0.522	.9797	29.49	0.0000	.001633
1.496	0.500	.9783	29.50	0.0000	.001633
1.500	0.477	.9769	29.57	0.0000	.001633
1.505	0.454	.9755	29.48	0.0000	.001633
1.509	0.431	.9741	29.55	0.0000	.001633
1.513	0.408	.9727	29.50	0.0000	.001633
1.517	0.385	.9713	29.50	0.0000	.001633
1.521	0.362	.9699	29.50	0.0000	.001633
1.525	0.339	.9685	29.55	0.0000	.001633
1.529	0.316	.9671	29.53	0.0000	.001633
1.533	0.293	.9657	29.56	0.0000	.001633
1.537	0.270	.9643	29.47	0.0000	.001633
1.541	0.247	.9629	29.45	0.0000	.001633

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TABLE A 7. (CONT.)
PROFILE - JPL-2 -- - P-INT PRESSURE DATA

ENGINE MACM NO. = .7002			TOTAL PRESSURE = .6891E+05 N/M ²			TOTAL TEMPERATURE = 311.56 DEG-K		
X = 24.21 -M			DELTA STARO = .4124 CM			M = 1.546		
LE-203.3A M/SEC			RE-DELTA-STARO = 3300.			MUTALL = .3792 CM=2/SEC		
LEAST SQUARE FIT PARAMETERS			C _{DA} = .002109			DELTA = 2.6893 CM		
UTARO = 9.0114 M/SEC			C _{DA} = .002109			P10 = .6917		
C _{DA} = .002109			YMAK = 2.693 CM			YMAK = .083 CM		
V (CM)	V/UTARO	V-M/US	M/ME	RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
0.000	3.000	3.	0.0000	.9009	0.0000	0.00	1.0000	0.000000
.010	.034	24.	.3364	.9154	.6074	11.80	1.0000	0.000000
.037	.096	47.	.4512	.9210	.4701	13.79	.9995	.0000002
.070	.114	72.	.5037	.9260	.4234	15.36	.9994	.0000007
.094	.144	104.	.5383	.9294	.3583	16.40	.9975	.0000012
.097	.214	134.	.5583	.9314	.2783	16.99	.9943	.0000016
.083	.314	171.	.5477	.9350	.1670	17.84	.9937	.0000045
.093	.347	224.	.5594	.9345	.1194	18.27	.9925	.0000020
.103	.404	274.	.6144	.9385	.0743	18.72	.9911	.0000033
.147	.524	335.	.6322	.9406	.0499	19.19	.9873	.0000045
.143	.614	387.	.6575	.9424	.0487	19.99	.9815	.0000053
.144	.700	443.	.6595	.9440	.0460	20.44	.9775	.0000061
.215	.800	513.	.6750	.9460	.0440	20.63	.9748	.0000078
.214	.821	548.	.6815	.9449	.0404	20.89	.9711	.0000077
.240	.974	614.	.6904	.9441	.0400	21.24	.9680	.0000085
.240	1.052	667.	.6414	.9483	.0423	21.30	.9624	.0000088
.314	1.144	751.	.7030	.9494	.0456	21.58	.9592	.0000110
.341	1.281	811.	.7075	.9475	.0470	21.58	.9534	.0000124
.347	1.374	872.	.7140	.9434	.0496	21.81	.9532	.0000134
.382	1.433	908.	.7214	.9455	.0444	21.96	.9430	.0000153
.424	1.670	1014.	.7270	.9432	.0450	22.14	.9353	.0000169
.444	1.748	1107.	.7344	.9443	.0471	22.64	.9274	.0000184
.504	1.891	1194.	.7504	.9447	.0444	22.84	.9188	.0000204
.544	2.043	1294.	.7581	.9454	.0439	23.14	.9102	.0000227
.542	2.184	1385.	.7677	.9493	.0433	23.13	.9024	.0000234
.615	2.310	1463.	.7672	.9492	.0426	23.29	.8914	.0000259
.659	2.472	1544.	.7727	.9400	.0454	23.44	.8817	.0000270
.607	2.615	1656.	.7794	.9411	.0439	23.75	.8713	.0000249
.735	2.757	1747.	.7847	.9426	.0403	23.91	.8645	.0000312
.759	2.849	1804.	.7944	.9434	.0435	24.04	.8533	.0000333
.747	2.991	1895.	.7984	.9441	.0421	24.30	.8404	.0000357
.839	3.144	1934.	.8074	.9455	.0400	24.40	.8329	.0000371
.843	3.279	2042.	.8114	.9449	.0455	24.54	.8194	.0000345
.904	3.391	2114.	.8142	.9475	.0399	24.65	.8094	.0000413
.933	3.501	2214.	.8202	.9483	.0440	24.78	.8003	.0000430
.940	3.601	2281.	.8244	.9490	.0423	24.91	.7904	.0000447
.984	3.701	2345.	.8291	.9490	.0423	25.04	.7758	.0000473
1.027	3.853	2441.	.8345	.9490	.0472	25.30	.7592	.0000517
1.093	4.101	2598.	.8450	.9474	.0432	25.54	.7248	.0000554
1.153	4.325	2740.	.8514	.9477	.0407	25.77	.7043	.0000541
1.194	4.494	2849.	.8593	.9740	.0407	25.77	.7063	.0000541

TABLE A 7. (CONT.)

V (°M)	V/14670	V-PLUS	M/ME	REQ/RMFE	U/UE	U-PLUS	TAU/TAI-MAX	V/U
1.350	4.491	2972.	.8671	.9756	.8779	25.99	.6836	.000428
1.311	4.929	3117.	.8802	.9776	.8992	26.36	.6595	.000073
1.362	5.111	3236.	.8848	.9786	.8945	26.49	.6316	.000712
1.416	5.320	3371.	.8922	.9794	.9014	26.70	.6042	.000754
1.477	5.539	3510.	.9077	.9807	.9045	26.86	.5749	.000700
1.500	5.738	3636.	.9063	.9823	.9126	27.10	.5475	.000842
1.581	5.910	3787.	.9106	.9830	.9184	27.22	.5209	.000842
1.666	6.166	3908.	.9193	.9856	.9256	27.67	.4871	.000922
1.703	6.387	4067.	.9236	.9856	.9306	27.59	.4556	.000979
1.752	6.573	4165.	.9310	.9871	.9390	27.85	.4284	.001014
1.808	6.768	4284.	.9369	.9878	.9426	27.96	.3959	.001049
1.852	6.969	4431.	.9475	.9880	.9474	28.12	.3716	.001097
1.901	7.165	4573.	.9619	.9885	.9545	28.33	.3449	.001155
1.950	7.316	4635.	.9660	.9910	.9645	28.46	.3166	.001173
2.021	7.583	4756.	.9792	.9930	.9692	28.59	.2815	.001224
2.077	7.792	4937.	.9838	.9939	.9672	28.72	.2518	.001267
2.162	8.035	5091.	.9712	.9950	.9709	28.92	.2182	.001312
2.197	8.260	5221.	.9731	.9957	.9757	29.09	.1907	.001349
2.266	8.619	5385.	.9779	.9966	.9800	29.11	.1652	.001364
2.335	8.865	5572.	.9821	.9966	.9816	29.23	.1393	.001418
2.366	9.076	5672.	.9860	.9972	.9873	29.36	.1117	.001454
2.426	9.192	5767.	.9885	.9977	.9896	29.40	.0869	.001488
2.491	9.355	5926.	.9939	.9982	.9919	29.67	.0673	.001522
2.550	9.524	6136.	.9923	.9986	.9931	29.71	.0474	.001544
2.586	9.731	6186.	.9950	.9990	.9945	29.59	.0253	.001577
2.655	9.960	6317.	.9961	.9988	.9947	29.26	.0073	.001591
2.703	10.161	6425.	.9983	.9986	.9964	29.68	0.0000	.001607
2.757	10.361	6552.	.9993	.9986	.9985	29.68	0.0000	.001620
2.807	10.755	6816.	.9973	.9986	.9946	29.45	0.0000	.001640
2.856	11.079	7070.	.9976	.9995	.9979	29.62	0.0000	.001660
2.906	11.627	7260.	.9990	.9999	.9999	29.72	0.0000	.001660
2.956	11.889	7606.	.9996	.9996	.9996	29.71	0.0000	.001660
3.016	12.065	7841.	1.0000	1.0000	1.0000	29.74	0.0000	.001660
3.061	12.156	7902.	1.0000	1.0000	1.0000	29.73	0.0000	.001660
3.105	12.322	7907.	.9995	.9995	.9977	29.65	0.0000	.001660
3.176	12.671	7901.	1.0015	1.0002	1.0009	29.75	0.0000	.001660
3.246	12.819	7995.	1.0015	1.0000	1.0014	29.77	0.0000	.001660
3.307	12.780	8092.	1.0000	1.0000	1.0000	29.73	0.0000	.001660
3.451	12.965	8203.	.9980	.9986	.9982	29.67	0.0000	.001660

TABLE A 7. ICENT.1
M/M

V (CM)	V/MPH	V-PLUS	M/M	ICENT.1 M/M	U/UF	U-PLUS	TAU/TAI-MAX	V/II
1.223	6.449	3006.	.8593	.9730	.8711	25.41	.7215	.000564
1.241	6.588	3098.	.8638	.9738	.8753	25.73	.7066	.000591
1.256	6.717	3185.	.8695	.9749	.8806	25.89	.6923	.000614
1.267	6.846	3297.	.8753	.9759	.8860	26.06	.6735	.000645
1.279	6.974	3388.	.8797	.9767	.8901	26.18	.6519	.000670
1.291	7.102	3475.	.8822	.9771	.8925	26.25	.6276	.000695
1.302	7.228	3569.	.8860	.9778	.8949	26.36	.6029	.000722
1.313	7.354	3691.	.8900	.9783	.8973	26.58	.6037	.000757
1.324	7.479	3772.	.8940	.9789	.8992	26.67	.5886	.000781
1.335	7.604	3858.	.8981	.9794	.9013	26.79	.5703	.000809
1.346	7.729	3948.	.9013	.9800	.9033	26.90	.5439	.000830
1.357	7.854	4042.	.9045	.9806	.9067	27.00	.5218	.000851
1.368	7.979	4139.	.9077	.9812	.9099	27.11	.5000	.000873
1.379	8.104	4240.	.9110	.9818	.9133	27.25	.4814	.000895
1.390	8.228	4344.	.9142	.9824	.9155	27.34	.4656	.000917
1.401	8.353	4451.	.9174	.9830	.9177	27.42	.4500	.000939
1.412	8.478	4560.	.9206	.9836	.9199	27.53	.4344	.000961
1.423	8.602	4672.	.9238	.9842	.9221	27.60	.4188	.000983
1.434	8.727	4787.	.9270	.9848	.9243	27.67	.4033	.000999
1.445	8.851	4904.	.9302	.9854	.9265	27.74	.3878	.001015
1.456	8.976	5022.	.9334	.9860	.9287	27.81	.3723	.001031
1.467	9.100	5142.	.9366	.9866	.9309	27.88	.3568	.001047
1.478	9.224	5264.	.9398	.9872	.9331	27.95	.3413	.001063
1.489	9.348	5388.	.9430	.9878	.9353	28.02	.3258	.001079
1.500	9.472	5514.	.9462	.9884	.9375	28.09	.3103	.001095
1.511	9.596	5642.	.9494	.9890	.9397	28.16	.2948	.001111
1.522	9.720	5772.	.9526	.9896	.9419	28.23	.2793	.001127
1.533	9.844	5904.	.9558	.9902	.9441	28.30	.2638	.001143
1.544	9.968	6038.	.9590	.9908	.9463	28.37	.2483	.001159
1.555	10.092	6174.	.9622	.9914	.9485	28.44	.2328	.001175
1.566	10.216	6312.	.9654	.9920	.9507	28.51	.2173	.001191
1.577	10.340	6452.	.9686	.9926	.9529	28.58	.2018	.001207
1.588	10.464	6594.	.9718	.9932	.9551	28.65	.1863	.001223
1.599	10.588	6738.	.9750	.9938	.9573	28.72	.1708	.001239
1.610	10.712	6884.	.9782	.9944	.9595	28.79	.1553	.001255
1.621	10.836	7032.	.9814	.9950	.9617	28.86	.1398	.001271
1.632	10.960	7182.	.9846	.9956	.9639	28.93	.1243	.001287
1.643	11.084	7334.	.9878	.9962	.9661	29.00	.1088	.001303
1.654	11.208	7488.	.9910	.9968	.9683	29.07	.0933	.001319
1.665	11.332	7644.	.9942	.9974	.9705	29.14	.0778	.001335
1.676	11.456	7802.	.9974	.9980	.9727	29.21	.0623	.001351
1.687	11.580	7962.	.9996	.9986	.9749	29.28	.0468	.001367
1.698	11.704	8124.	.9998	.9992	.9771	29.35	.0313	.001383
1.709	11.828	8288.	.9999	.9998	.9793	29.42	.0158	.001399
1.720	11.952	8454.	.9999	.9999	.9815	29.49	.0003	.001415
1.731	12.076	8622.	.9999	.9999	.9837	29.56	.0000	.001431
1.742	12.200	8792.	.9999	.9999	.9859	29.63	.0000	.001447
1.753	12.324	8964.	.9999	.9999	.9881	29.70	.0000	.001463
1.764	12.448	9138.	.9999	.9999	.9903	29.77	.0000	.001479
1.775	12.572	9314.	.9999	.9999	.9925	29.84	.0000	.001495
1.786	12.696	9492.	.9999	.9999	.9947	29.91	.0000	.001511
1.797	12.820	9672.	.9999	.9999	.9969	29.98	.0000	.001527
1.808	12.944	9854.	.9999	.9999	.9991	30.05	.0000	.001543
1.819	13.068	10038.	.9999	.9999	.9993	30.12	.0000	.001559
1.830	13.192	10224.	.9999	.9999	.9995	30.19	.0000	.001575
1.841	13.316	10412.	.9999	.9999	.9997	30.26	.0000	.001591
1.852	13.440	10602.	.9999	.9999	.9999	30.33	.0000	.001607
1.863	13.564	10794.	.9999	.9999	.9999	30.40	.0000	.001623
1.874	13.688	10988.	.9999	.9999	.9999	30.47	.0000	.001639
1.885	13.812	11184.	.9999	.9999	.9999	30.54	.0000	.001655
1.896	13.936	11382.	.9999	.9999	.9999	30.61	.0000	.001671
1.907	14.060	11582.	.9999	.9999	.9999	30.68	.0000	.001687
1.918	14.184	11784.	.9999	.9999	.9999	30.75	.0000	.001703
1.929	14.308	11988.	.9999	.9999	.9999	30.82	.0000	.001719
1.940	14.432	12194.	.9999	.9999	.9999	30.89	.0000	.001735
1.951	14.556	12402.	.9999	.9999	.9999	30.96	.0000	.001751
1.962	14.680	12612.	.9999	.9999	.9999	31.03	.0000	.001767
1.973	14.804	12824.	.9999	.9999	.9999	31.10	.0000	.001783
1.984	14.928	13038.	.9999	.9999	.9999	31.17	.0000	.001799
1.995	15.052	13254.	.9999	.9999	.9999	31.24	.0000	.001815
2.006	15.176	13472.	.9999	.9999	.9999	31.31	.0000	.001831
2.017	15.300	13692.	.9999	.9999	.9999	31.38	.0000	.001847
2.028	15.424	13914.	.9999	.9999	.9999	31.45	.0000	.001863
2.039	15.548	14138.	.9999	.9999	.9999	31.52	.0000	.001879
2.050	15.672	14364.	.9999	.9999	.9999	31.59	.0000	.001895
2.061	15.796	14592.	.9999	.9999	.9999	31.66	.0000	.001911
2.072	15.920	14822.	.9999	.9999	.9999	31.73	.0000	.001927
2.083	16.044	15054.	.9999	.9999	.9999	31.80	.0000	.001943
2.094	16.168	15288.	.9999	.9999	.9999	31.87	.0000	.001959
2.105	16.292	15524.	.9999	.9999	.9999	31.94	.0000	.001975
2.116	16.416	15762.	.9999	.9999	.9999	32.01	.0000	.001991
2.127	16.540	16002.	.9999	.9999	.9999	32.08	.0000	.002007
2.138	16.664	16244.	.9999	.9999	.9999	32.15	.0000	.002023
2.149	16.788	16488.	.9999	.9999	.9999	32.22	.0000	.002039
2.160	16.912	16734.	.9999	.9999	.9999	32.29	.0000	.002055
2.171	17.036	16982.	.9999	.9999	.9999	32.36	.0000	.002071
2.182	17.160	17232.	.9999	.9999	.9999	32.43	.0000	.002087
2.193	17.284	17484.	.9999	.9999	.9999	32.50	.0000	.002103
2.204	17.408	17738.	.9999	.9999	.9999	32.57	.0000	.002119
2.215	17.532	18004.	.9999	.9999	.9999	32.64	.0000	.002135
2.226	17.656	18272.	.9999	.9999	.9999	32.71	.0000	.002151
2.237	17.780	18542.	.9999	.9999	.9999	32.78	.0000	.002167
2.248	17.904	18814.	.9999	.9999	.9999	32.85	.0000	.002183
2.259	18.028	19088.	.9999	.9999	.9999	32.92	.0000	.002199
2.270	18.152	19364.	.9999	.9999	.9999	32.99	.0000	.002215
2.281	18.276	19642.	.9999	.9999	.9999	33.06	.0000	.002231
2.292	18.400	19922.	.9999	.9999	.9999	33.13	.0000	.002247
2.303	18.524	20204.	.9999	.9999	.9999	33.20	.0000	.002263
2.314	18.648	20488.	.9999	.9999	.9999	33.27	.0000	.002279
2.325	18.772	20774.	.9999	.9999	.9999	33.34	.0000	.002295
2.336	18.896	21062.	.9999	.9999	.9999	33.41	.0000	.002311
2.347	19.020	21352.	.9999	.9999	.9999	33.48	.0000	.002327
2.358	19.144	21644.	.9999	.9999	.9999	33.55	.0000	.002343
2.369	19.268	21938.	.9999	.9999	.9999	33.62	.0000	.002359
2.380	19.392	22234.	.9999	.9999	.9999	33.69	.0000	.002375
2.391	19.516	22532.	.9999	.9999	.9999	33.76	.0000	.002391
2.402	19.640	22832.	.9999	.9999	.9999	33.83	.0000	.002407
2.413	19.764	23134.	.9999	.9999	.9999	33.90	.0000	.002423
2.424	19.888	23438.	.9999	.9999	.9999	33.97	.0000	.002439
2.435	20.012	23744.	.9999	.9999	.9999	34.04	.0000	.002455
2.446	20.136	24052.	.9999	.9999	.9999	34.11	.0000	.002471
2.457	20.260	24362.	.9999	.9999	.9999	34.18	.0000	.002487
2.468	20.384	24674.	.9999	.9999	.9999	34.25	.0000	.002503
2.479	20.508	24988.	.9999	.9999	.9999	34.32	.0000	.002519
2.490	20.632	25304.	.9999	.9999	.9999	34.39	.0000	.002535
2.501	20.756	25622.	.9999	.9999	.9999	34.46	.0000	.002551
2.512	20.880	25942.	.9999	.9999	.9999	34.53	.0000	.002567
2.523	21.004	26264.	.9999	.9999	.9999	34.60	.0000	.002583
2.534	21.128	26588.	.9999	.9999	.9999	34.67	.0000	.002599
2.545	21.252	26914.	.9999	.9999	.9999	34.74	.0000	.002615
2.556	21.376	27242.	.9999	.9999	.9999	34.81	.0000	.002631
2.567	21.500	27572.	.9999	.9999	.9999	34.88	.0000	.002647
2.578	21.624	27904.	.9999	.9999	.9999	34.95	.0000	.002663
2.589	21.748	28238.	.9999	.9999	.9999	35.02	.0000	.002679
2.600	21.872	28574.	.9999	.9999	.9999	35.09	.0000	.002695
2.611	21.996	28912.	.9999	.9999	.9999	35.16	.0000	.002711
2.622	22.120	29252.	.9999	.9999	.9999	35.23	.0000	.002727
2.633	22.244	29594.	.9999	.9999	.9999	35.30	.0000	.002743
2.644	22.368	29938.	.9999	.9999	.9999	35.37	.0000	.002759
2.655	22.492	30284.	.9999	.9999	.9999	35.44	.0000	.002775
2.666	22.616	30632.	.9999	.9999	.9999	35.51	.0000	.002791
2.677	22.740	30982.	.9999	.9999	.9999	35.58	.0000	.002807

TABLE A 7. (CONT.)
 PROFILE - JPL-4 - - - PITOT PRESSURE DATA
 PING MACM NO. = .8016
 X = 0.00 CM

UEN 267.51 M/SEC. RE-DELTA-STAR = 36680.				DELTA STAR = .4395 CM RE-TMFTAU = 23710.		THETA = .2857 CM MINALLE = .3845 CM/SEC		Mo 1.53R Cp = .0020R6	
LEAST SQUARE FIT PARAMETERS UTAU = 9.1924 M/SEC. CHIKO = .0257E-05				Cp = .002120 VMAR = 2.709 CM		Plo = .A145 VMIN = .071 CM		DELTA = 2.9611 CM	
V (CM)	V/THETA	V-PLUS	M/ME	BMT/BME	U/IE	I-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.8978	0.0000	0.00	1.0000	0.000000	
.010	.036	26.	.8144	.9156	.6333	12.15	1.0000	0.000000	
.020	.072	30.	.6571	.9197	.4764	17.92		.000007	
.030	.108	31.	.5321	.9248	.4537	16.17		.000038	
.040	.144	126.	.5502	.9288	.4709	16.07		.000013	
.050	.180	170.	.5453	.9324	.4800	17.74		.000018	
.060	.216	248.	.5187	.9340	.4801	18.73		.000011	
.070	.252	336.	.4872	.9386	.4805	19.07		.000038	
.080	.288	370.	.4676	.9407	.4877	19.54		.000047	
.090	.324	426.	.4533	.9416	.4873	19.74		.000052	
.100	.360	473.	.4433	.9433	.4870	20.15		.000012	
.110	.396	541.	.4374	.9454	.4873	20.63		.000033	
.120	.432	636.	.4328	.9460	.4870	21.90		.000014	
.130	.468	696.	.4281	.9467	.4870	21.14		.000016	
.140	.504	774.	.4202	.9482	.4870	21.51		.000016	
.150	.540	854.	.4130	.9488	.4870	21.51		.000016	
.160	.576	934.	.4064	.9494	.4870	22.03		.000016	
.170	.612	1005.	.4001	.9494	.4870	21.91		.000016	
.180	.648	1065.	.3938	.9494	.4870	22.20		.000016	
.190	.684	1146.	.3876	.9494	.4870	22.44		.000016	
.200	.720	1246.	.3829	.9494	.4870	22.64		.000016	
.210	.756	1346.	.3784	.9494	.4870	22.64		.000016	
.220	.792	1446.	.3740	.9494	.4870	22.64		.000016	
.230	.828	1546.	.3697	.9494	.4870	22.64		.000016	
.240	.864	1646.	.3654	.9494	.4870	22.64		.000016	
.250	.900	1746.	.3611	.9494	.4870	22.64		.000016	
.260	.936	1846.	.3568	.9494	.4870	22.64		.000016	
.270	.972	1946.	.3525	.9494	.4870	22.64		.000016	
.280	1.008	2046.	.3482	.9494	.4870	22.64		.000016	
.290	1.044	2146.	.3439	.9494	.4870	22.64		.000016	
.300	1.080	2246.	.3396	.9494	.4870	22.64		.000016	
.310	1.116	2346.	.3353	.9494	.4870	22.64		.000016	
.320	1.152	2446.	.3310	.9494	.4870	22.64		.000016	
.330	1.188	2546.	.3267	.9494	.4870	22.64		.000016	
.340	1.224	2646.	.3224	.9494	.4870	22.64		.000016	
.350	1.260	2746.	.3181	.9494	.4870	22.64		.000016	
.360	1.296	2846.	.3138	.9494	.4870	22.64		.000016	
.370	1.332	2946.	.3095	.9494	.4870	22.64		.000016	
.380	1.368	3046.	.3052	.9494	.4870	22.64		.000016	
.390	1.404	3146.	.3009	.9494	.4870	22.64		.000016	
.400	1.440	3246.	.2966	.9494	.4870	22.64		.000016	
.410	1.476	3346.	.2923	.9494	.4870	22.64		.000016	
.420	1.512	3446.	.2880	.9494	.4870	22.64		.000016	
.430	1.548	3546.	.2837	.9494	.4870	22.64		.000016	
.440	1.584	3646.	.2794	.9494	.4870	22.64		.000016	
.450	1.620	3746.	.2751	.9494	.4870	22.64		.000016	
.460	1.656	3846.	.2708	.9494	.4870	22.64		.000016	
.470	1.692	3946.	.2665	.9494	.4870	22.64		.000016	
.480	1.728	4046.	.2622	.9494	.4870	22.64		.000016	
.490	1.764	4146.	.2579	.9494	.4870	22.64		.000016	
.500	1.800	4246.	.2536	.9494	.4870	22.64		.000016	
.510	1.836	4346.	.2493	.9494	.4870	22.64		.000016	
.520	1.872	4446.	.2450	.9494	.4870	22.64		.000016	
.530	1.908	4546.	.2407	.9494	.4870	22.64		.000016	
.540	1.944	4646.	.2364	.9494	.4870	22.64		.000016	
.550	1.980	4746.	.2321	.9494	.4870	22.64		.000016	
.560	2.016	4846.	.2278	.9494	.4870	22.64		.000016	
.570	2.052	4946.	.2235	.9494	.4870	22.64		.000016	
.580	2.088	5046.	.2192	.9494	.4870	22.64		.000016	
.590	2.124	5146.	.2149	.9494	.4870	22.64		.000016	
.600	2.160	5246.	.2106	.9494	.4870	22.64		.000016	
.610	2.196	5346.	.2063	.9494	.4870	22.64		.000016	
.620	2.232	5446.	.2020	.9494	.4870	22.64		.000016	
.630	2.268	5546.	.1977	.9494	.4870	22.64		.000016	
.640	2.304	5646.	.1934	.9494	.4870	22.64		.000016	
.650	2.340	5746.	.1891	.9494	.4870	22.64		.000016	
.660	2.376	5846.	.1848	.9494	.4870	22.64		.000016	
.670	2.412	5946.	.1805	.9494	.4870	22.64		.000016	
.680	2.448	6046.	.1762	.9494	.4870	22.64		.000016	
.690	2.484	6146.	.1719	.9494	.4870	22.64		.000016	
.700	2.520	6246.	.1676	.9494	.4870	22.64		.000016	
.710	2.556	6346.	.1633	.9494	.4870	22.64		.000016	
.720	2.592	6446.	.1590	.9494	.4870	22.64		.000016	
.730	2.628	6546.	.1547	.9494	.4870	22.64		.000016	
.740	2.664	6646.	.1504	.9494	.4870	22.64		.000016	
.750	2.700	6746.	.1461	.9494	.4870	22.64		.000016	
.760	2.736	6846.	.1418	.9494	.4870	22.64		.000016	
.770	2.772	6946.	.1375	.9494	.4870	22.64		.000016	
.780	2.808	7046.	.1332	.9494	.4870	22.64		.000016	
.790	2.844	7146.	.1289	.9494	.4870	22.64		.000016	
.800	2.880	7246.	.1246	.9494	.4870	22.64		.000016	
.810	2.916	7346.	.1203	.9494	.4870	22.64		.000016	
.820	2.952	7446.	.1160	.9494	.4870	22.64		.000016	
.830	2.988	7546.	.1117	.9494	.4870	22.64		.000016	
.840	3.024	7646.	.1074	.9494	.4870	22.64		.000016	
.850	3.060	7746.	.1031	.9494	.4870	22.64		.000016	
.860	3.096	7846.	.0988	.9494	.4870	22.64		.000016	
.870	3.132	7946.	.0945	.9494	.4870	22.64		.000016	
.880	3.168	8046.	.0902	.9494	.4870	22.64		.000016	
.890	3.204	8146.	.0859	.9494	.4870	22.64		.000016	
.900	3.240	8246.	.0816	.9494	.4870	22.64		.000016	
.910	3.276	8346.	.0773	.9494	.4870	22.64		.000016	
.920	3.312	8446.	.0730	.9494	.4870	22.64		.000016	
.930	3.348	8546.	.0687	.9494	.4870	22.64		.000016	
.940	3.384	8646.	.0644	.9494	.4870	22.64		.000016	
.950	3.420	8746.	.0601	.9494	.4870	22.64		.000016	
.960	3.456	8846.	.0558	.9494	.4870	22.64		.000016	
.970	3.492	8946.	.0515	.9494	.4870	22.64		.000016	
.980	3.528	9046.	.0472	.9494	.4870	22.64		.000016	
.990	3.564	9146.	.0429	.9494	.4870	22.64		.000016	
1.000	3.600	9246.	.0386	.9494	.4870	22.64		.000016	
1.010	3.636	9346.	.0343	.9494	.4870	22.64		.000016	
1.020	3.672	9446.	.0300	.9494	.4870	22.64		.000016	
1.030	3.708	9546.	.0257	.9494	.4870	22.64		.000016	
1.040	3.744	9646.	.0214	.9494	.4870	22.64		.000016	
1.050	3.780	9746.	.0171	.9494	.4870	22.64		.000016	
1.060	3.816	9846.	.0128	.9494	.4870	22.64		.000016	
1.070	3.852	9946.	.0085	.9494	.4870	22.64		.000016	
1.080	3.888	10046.	.0042	.9494	.4870	22.64		.000016	
1.090	3.924	10146.		.9494	.4870	22.64		.000016	

ORIGINAL PAGE IS
 OF POOR QUALITY

TABLE A 7. (CONT.)
M/HE

V (CM)	V/TMSTA	V-PLUS	M/HE	ICONT.1 RMD/RMPC	U/HE	II-PLUS	TAU/TAU-MAX	V/U
1.376	4.814	3791.	.8704	.9732	.AR13	24.00	.AR07	.000A30
1.410	4.934	3773.	.8711	.9744	.AR74	24.18	.AAAA	.000A53
1.454	5.049	3476.	.8812	.9771	.R014	24.30	.A401	.000A41
1.467	5.222	3547.	.8854	.9779	.R055	24.42	.A330	.000A07
1.520	5.427	3707.	.8927	.9792	.R021	24.43	.A074	.000344
1.546	5.547	3816.	.8990	.9803	.R078	24.90	.5876	.000778
1.647	5.744	3718.	.9024	.9810	.R112	24.90	.5847	.000A13
1.692	5.925	4047.	.9114	.9827	.R194	27.16	.4238	.000A55
1.733	6.067	4144.	.9143	.9833	.R220	27.23	.4249	.000A74
1.779	6.227	4253.	.9141	.9845	.R237	27.28	.5034	.000A04
1.817	6.350	4344.	.9235	.9840	.R315	27.49	.4843	.000911
1.840	6.512	4448.	.9274	.9857	.R363	27.40	.4144	.000344
1.899	6.449	4562.	.9305	.9863	.R370	27.49	.4654	.000442
1.936	6.778	4630.	.9340	.9874	.R428	27.47	.4277	.001014
1.985	6.947	4745.	.9384	.9874	.R442	27.91	.4038	.001053
2.021	7.074	4833.	.9403	.9881	.R450	27.96	.3843	.001014
2.067	7.234	4943.	.9442	.9891	.R473	28.10	.3639	.001110
2.122	7.427	5073.	.9540	.9910	.R502	28.37	.3373	.001146
2.162	7.569	5174.	.9551	.9908	.R501	28.36	.3174	.001174
2.203	7.712	5248.	.9594	.9918	.R535	28.50	.2980	.001273
2.249	7.872	5377.	.9615	.9922	.R552	28.55	.2754	.001234
2.291	8.014	5477.	.9654	.9931	.R600	28.47	.2442	.001211
2.327	8.147	5545.	.9678	.9935	.R710	28.73	.2309	.001245
2.374	8.314	5647.	.9717	.9943	.R745	28.43	.2142	.001314
2.407	8.427	5764.	.9722	.9944	.R749	28.45	.2073	.001345
2.444	8.554	5844.	.9744	.9952	.R780	28.97	.1840	.001347
2.473	8.741	5944.	.9818	.9951	.R834	29.11	.1474	.001342
2.517	8.881	6044.	.9820	.9951	.R834	29.11	.1474	.001342
2.549	8.992	6142.	.9833	.9944	.R857	28.15	.1374	.001440
2.617	9.141	6247.	.9829	.9945	.R844	28.14	.1133	.001445
2.656	9.290	6365.	.9880	.9975	.R877	28.24	.0640	.001474
2.689	9.414	6437.	.9897	.9979	.R907	29.33	.0655	.001472
2.744	9.619	6570.	.9927	.9985	.R935	29.47	.0446	.001460
2.799	9.794	6652.	.9948	.9979	.R948	29.34	.0474	.001462
2.834	9.936	6784.	.9944	.9999	.R954	29.49	.0349	.001459
2.847	10.000	6842.	.9962	.9992	.R944	29.51	.0214	.001454
2.913	10.244	7113.	.9970	.9993	.R973	29.53	.0074	.001454
2.968	10.459	7144.	.9978	.9994	.R980	29.55	0.0000	.001454
3.044	10.643	7184.	.9971	.9994	.R974	29.54	0.0000	.001454
3.079	10.779	7143.	.9984	.9997	.R989	29.54	0.0000	.001454
3.139	10.948	7485.	.9971	.9994	.R974	29.54	0.0000	.001454
3.177	11.121	7504.	.9993	.9994	.R984	29.57	0.0000	.001454
3.219	11.249	7497.	.9998	.9994	.R999	29.41	0.0000	.001454
3.269	11.410	7794.	.9993	.9994	.R984	29.40	0.0000	.001454
3.304	11.570	7907.	.9994	.9999	.R994	29.40	0.0000	.001454
3.345	11.779	8044.	.9998	.9999	.R999	29.41	0.0000	.001454
3.412	11.952	8144.	1.0001	1.0000	1.0001	29.42	0.0000	.001454
3.462	12.117	8277.	1.0001	1.0000	1.0001	29.42	0.0000	.001454
3.521	12.374	8419.	.9993	.9994	.R994	29.40	0.0000	.001454
3.545	12.410	8477.	1.0004	1.0000	1.0003	29.43	0.0000	.001454

TABLE A 7a (CONT.)
PROFILE - JPL-5 -- - PITOT PRESSURE DATA

ENGINE MACH NO. - .7995			TOTAL PRESSURE = .6439E+05 N/M ²			TOTAL TEMPERATURE = 311.32 DEG-K		
X = 7.62 CM			DELTA STAR = .4564 CM			T-META = .2944 CM		
RE-TMETA = 24570.			M = 1.539			DELTA = 3.0634 CM		
LEAST SQUARE FIT PARAMETERS			CF = .002105			P1 = .4243		
UTAR = 0.1744 M/SEC			VMAX = 2.870 CM			V1N = .064 CM		
CMISQ = .843E-05								
V (CM)	V/TMETA	Y-PLUS	M/ME	RND/RMSE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.8981	0.0000	0.00	1.0000	0.000000
.010	.016	24.	.4000	.9153	.4275	12.5	1.0000	0.000000
.020	.034	39.	.4531	.9192	.4776	13.96	.9999	.000002
.030	.055	47.	.5166	.9254	.5300	15.02	.9998	.000004
.040	.076	57.	.5382	.9277	.5497	16.41	.9974	.000012
.050	.098	162.	.5700	.9314	.5915	17.34	.9947	.000018
.060	.121	214.	.5953	.9343	.6149	18.11	.9917	.000024
.070	.146	274.	.6206	.9374	.6410	18.96	.9889	.000032
.080	.172	328.	.6422	.9404	.6674	19.72	.9864	.000044
.090	.199	370.	.6591	.9433	.6901	20.45	.9844	.000051
.100	.226	418.	.6743	.9461	.7142	21.10	.9820	.000058
.110	.254	470.	.6830	.9487	.7376	21.60	.9798	.000064
.120	.282	551.	.6880	.9512	.7526	22.00	.9778	.000071
.130	.311	660.	.6934	.9537	.7643	22.34	.9761	.000078
.140	.340	708.	.7055	.9560	.7727	22.53	.9746	.000084
.150	.369	762.	.7120	.9581	.7795	22.64	.9732	.000090
.160	.398	850.	.7186	.9594	.7837	22.70	.9720	.000095
.170	.427	916.	.7224	.9616	.7857	22.73	.9710	.000101
.180	.456	1033.	.7331	.9629	.7870	22.75	.9702	.000108
.190	.485	1118.	.7349	.9637	.7876	22.79	.9694	.000114
.200	.514	1178.	.7417	.9642	.7892	22.80	.9687	.000121
.210	.543	1226.	.7461	.9649	.7909	22.84	.9682	.000128
.220	.572	1275.	.7491	.9656	.7927	22.86	.9678	.000134
.230	.601	1334.	.7537	.9661	.7946	22.87	.9674	.000141
.240	.630	1401.	.7573	.9667	.7965	22.89	.9670	.000147
.250	.659	1470.	.7612	.9672	.7984	22.91	.9667	.000154
.260	.688	1538.	.7653	.9677	.7999	22.93	.9664	.000160
.270	.717	1604.	.7694	.9681	.8014	22.94	.9661	.000167
.280	.746	1678.	.7732	.9685	.8029	22.95	.9658	.000174
.290	.775	1754.	.7772	.9689	.8044	22.96	.9655	.000180
.300	.804	1831.	.7812	.9694	.8059	22.97	.9652	.000187
.310	.833	1910.	.7853	.9698	.8074	22.98	.9649	.000193
.320	.862	1990.	.7894	.9702	.8089	22.99	.9646	.000200
.330	.891	2070.	.7935	.9707	.8104	23.00	.9643	.000206
.340	.920	2150.	.7976	.9711	.8119	23.01	.9640	.000213
.350	.949	2230.	.8017	.9716	.8134	23.02	.9637	.000219
.360	.978	2310.	.8058	.9720	.8149	23.03	.9634	.000226
.370	1.007	2390.	.8099	.9725	.8164	23.04	.9631	.000232
.380	1.036	2470.	.8140	.9729	.8179	23.05	.9628	.000239
.390	1.065	2550.	.8181	.9734	.8194	23.06	.9625	.000245
.400	1.094	2630.	.8222	.9738	.8209	23.07	.9622	.000252
.410	1.123	2710.	.8263	.9743	.8224	23.08	.9619	.000258
.420	1.152	2790.	.8304	.9747	.8239	23.09	.9616	.000265
.430	1.181	2870.	.8345	.9752	.8254	23.10	.9613	.000271
.440	1.210	2950.	.8386	.9756	.8269	23.11	.9610	.000278
.450	1.239	3030.	.8427	.9761	.8284	23.12	.9607	.000284
.460	1.268	3110.	.8468	.9765	.8299	23.13	.9604	.000291
.470	1.297	3190.	.8509	.9770	.8314	23.14	.9601	.000297
.480	1.326	3270.	.8550	.9774	.8329	23.15	.9598	.000304
.490	1.355	3350.	.8591	.9779	.8344	23.16	.9595	.000310
.500	1.384	3430.	.8632	.9783	.8359	23.17	.9592	.000317
.510	1.413	3510.	.8673	.9788	.8374	23.18	.9589	.000323
.520	1.442	3590.	.8714	.9792	.8389	23.19	.9586	.000330
.530	1.471	3670.	.8755	.9797	.8404	23.20	.9583	.000336
.540	1.500	3750.	.8796	.9801	.8419	23.21	.9580	.000343
.550	1.529	3830.	.8837	.9806	.8434	23.22	.9577	.000349
.560	1.558	3910.	.8878	.9810	.8449	23.23	.9574	.000356
.570	1.587	3990.	.8919	.9815	.8464	23.24	.9571	.000362
.580	1.616	4070.	.8960	.9820	.8479	23.25	.9568	.000369
.590	1.645	4150.	.9001	.9825	.8494	23.26	.9565	.000375
.600	1.674	4230.	.9042	.9830	.8509	23.27	.9562	.000382
.610	1.703	4310.	.9083	.9835	.8524	23.28	.9559	.000388
.620	1.732	4390.	.9124	.9840	.8539	23.29	.9556	.000395
.630	1.761	4470.	.9165	.9845	.8554	23.30	.9553	.000401
.640	1.790	4550.	.9206	.9850	.8569	23.31	.9550	.000408
.650	1.819	4630.	.9247	.9855	.8584	23.32	.9547	.000414
.660	1.848	4710.	.9288	.9860	.8599	23.33	.9544	.000421
.670	1.877	4790.	.9329	.9865	.8614	23.34	.9541	.000427
.680	1.906	4870.	.9370	.9870	.8629	23.35	.9538	.000434
.690	1.935	4950.	.9411	.9875	.8644	23.36	.9535	.000440
.700	1.964	5030.	.9452	.9880	.8659	23.37	.9532	.000447
.710	1.993	5110.	.9493	.9885	.8674	23.38	.9529	.000453
.720	2.022	5190.	.9534	.9890	.8689	23.39	.9526	.000460
.730	2.051	5270.	.9575	.9895	.8704	23.40	.9523	.000466
.740	2.080	5350.	.9616	.9900	.8719	23.41	.9520	.000473
.750	2.109	5430.	.9657	.9905	.8734	23.42	.9517	.000479
.760	2.138	5510.	.9698	.9910	.8749	23.43	.9514	.000486
.770	2.167	5590.	.9739	.9915	.8764	23.44	.9511	.000492
.780	2.196	5670.	.9780	.9920	.8779	23.45	.9508	.000499
.790	2.225	5750.	.9821	.9925	.8794	23.46	.9505	.000505
.800	2.254	5830.	.9862	.9930	.8809	23.47	.9502	.000512
.810	2.283	5910.	.9903	.9935	.8824	23.48	.9500	.000518
.820	2.312	5990.	.9944	.9940	.8839	23.49	.9497	.000524
.830	2.341	6070.	.9985	.9945	.8854	23.50	.9494	.000531
.840	2.370	6150.	1.0000	.9950	.8869	23.51	.9491	.000537
.850	2.399	6230.	1.0000	.9955	.8884	23.52	.9488	.000544
.860	2.428	6310.	1.0000	.9960	.8899	23.53	.9485	.000550
.870	2.457	6390.	1.0000	.9965	.8914	23.54	.9482	.000557
.880	2.486	6470.	1.0000	.9970	.8929	23.55	.9479	.000563
.890	2.515	6550.	1.0000	.9975	.8944	23.56	.9476	.000570
.900	2.544	6630.	1.0000	.9980	.8959	23.57	.9473	.000576
.910	2.573	6710.	1.0000	.9985	.8974	23.58	.9470	.000583
.920	2.602	6790.	1.0000	.9990	.8989	23.59	.9467	.000589
.930	2.631	6870.	1.0000	.9995	.8999	23.60	.9464	.000596
.940	2.660	6950.	1.0000	1.0000	.9009	23.61	.9461	.000602
.950	2.689	7030.	1.0000	1.0000	.9019	23.62	.9458	.000609
.960	2.718	7110.	1.0000	1.0000	.9029	23.63	.9455	.000615
.970	2.747	7190.	1.0000	1.0000	.9039	23.64	.9452	.000622
.980	2.776	7270.	1.0000	1.0000	.9049	23.65	.9449	.000628
.990	2.805	7350.	1.0000	1.0000	.9059	23.66	.9446	.000635
1.000	2.834	7430.	1.0000	1.0000	.9069	23.67	.9443	.000641

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TABLE A 7. (CONT.)
M/NE BMD/RMFE

V (M)	V/TWETA	V-PLUS	M/NE	BMD/RMFE	U/UE	1+PLUS	TAU/TAU-MAX	V/U
1.154	3.493	2739.	.8438	.9707	.8544	25.34	.7743	.000464
1.174	3.942	2788.	.8394	.9699	.8523	25.21	.7696	.000476
1.212	4.099	2878.	.8425	.9715	.8408	25.57	.7549	.000499
1.249	4.202	2946.	.8481	.9714	.8475	25.66	.7494	.000514
1.304	4.407	3101.	.8561	.9729	.8483	25.70	.7240	.000525
1.344	4.534	3192.	.8624	.9739	.8459	25.87	.7099	.000576
1.343	4.644	3282.	.8717	.9754	.8476	26.13	.6958	.000601
1.348	4.750	3342.	.8761	.9753	.8411	26.09	.6861	.000617
1.442	4.845	3424.	.8753	.9762	.8439	26.23	.6724	.000639
1.444	4.907	3484.	.8814	.9773	.8418	26.41	.6561	.000665
1.517	5.118	3602.	.8841	.9774	.8418	26.48	.6474	.000666
1.544	5.221	3674.	.8845	.9785	.8401	26.61	.6402	.000704
1.593	5.375	3782.	.8910	.9790	.8405	26.68	.6111	.000736
1.639	5.429	3891.	.8948	.9797	.8409	26.78	.6016	.000767
1.696	5.722	4072.	.9041	.9814	.8436	27.08	.5846	.000805
1.741	5.873	4132.	.9085	.9822	.8467	27.17	.5649	.000835
1.774	5.983	4210.	.9103	.9825	.8484	27.22	.5320	.000857
1.807	6.095	4289.	.9157	.9834	.8474	27.34	.5170	.000889
1.817	6.143	4337.	.9191	.9834	.8474	27.47	.5077	.000894
1.849	6.305	4434.	.9223	.9848	.8494	27.56	.4884	.000922
1.901	6.412	4512.	.9253	.9843	.8494	27.65	.4737	.000944
1.931	6.515	4544.	.9301	.9842	.8465	27.74	.4594	.000965
2.014	6.793	4780.	.9377	.9872	.8435	27.99	.4204	.001022
2.044	6.936	4851.	.9379	.9877	.8437	28.00	.4043	.001044
2.084	7.029	4944.	.9370	.9874	.8439	27.97	.3874	.001049
2.127	7.174	5044.	.9439	.9889	.8492	28.17	.3649	.001094
2.157	7.277	5121.	.9445	.9890	.8497	28.18	.3524	.001119
2.194	7.349	5193.	.9502	.9901	.8549	28.34	.3340	.001139
2.235	7.434	5304.	.9544	.9913	.8606	28.32	.3154	.001170
2.279	7.484	5410.	.9576	.9915	.8616	28.55	.2950	.001149
2.344	7.920	5573.	.9614	.9934	.8653	28.65	.2631	.001243
2.374	8.082	5647.	.9662	.9934	.8713	28.85	.2411	.001273
2.409	8.194	5744.	.9694	.9939	.8726	28.89	.2261	.001294
2.443	8.309	5832.	.9740	.9947	.8765	29.01	.2104	.001314
2.413	8.474	5945.	.9734	.9947	.8743	29.00	.1891	.001344
2.462	8.646	6082.	.9787	.9957	.8808	29.14	.1674	.001372
2.497	8.777	6173.	.9797	.9959	.8817	29.17	.1470	.001394
2.507	8.939	6290.	.9829	.9964	.8844	29.26	.1314	.001420
2.549	9.072	6384.	.9856	.9971	.8870	29.33	.1143	.001441
2.581	9.217	6484.	.9893	.9978	.8904	29.43	.0994	.001443
2.591	9.340	6601.	.9892	.9974	.8903	29.43	.0821	.001444
2.571	9.417	6697.	.9893	.9974	.8904	29.43	.0677	.001505
2.570	9.490	6812.	.9916	.9983	.8924	29.50	.0435	.001526
2.604	9.809	6902.	.9941	.9984	.8967	29.56	.0393	.001542
2.647	9.841	6994.	.9954	.9990	.8958	29.60	.0274	.001554
2.625	10.104	7110.	.9949	.9989	.8944	29.59	.0136	.001574
3.031	10.224	7194.	.9959	.9991	.8943	29.62	.0041	.001594
3.047	10.344	7279.	.9976	.9995	.8979	29.65	0.0000	.001593
3.110	10.459	7381.	.9954	.9991	.8941	29.61	0.0000	.001593
3.173	10.729	7502.	.9974	.9994	.8974	29.66	0.0000	.001593
3.242	11.072	7791.	.9991	.9994	.8992	29.70	0.0000	.001593
3.359	11.329	7972.	.9980	.9994	.8982	29.77	0.0000	.001593
3.442	11.412	8171.	.9995	.9999	.8994	29.72	0.0000	.001593
3.549	11.945	8403.	.9994	.9994	.8994	29.71	0.0000	.001593
3.613	12.194	8575.	1.0004	1.0001	1.0005	29.75	0.0000	.001593
3.695	12.444	8771.	1.0015	1.0003	1.0014	29.77	0.0000	.001593

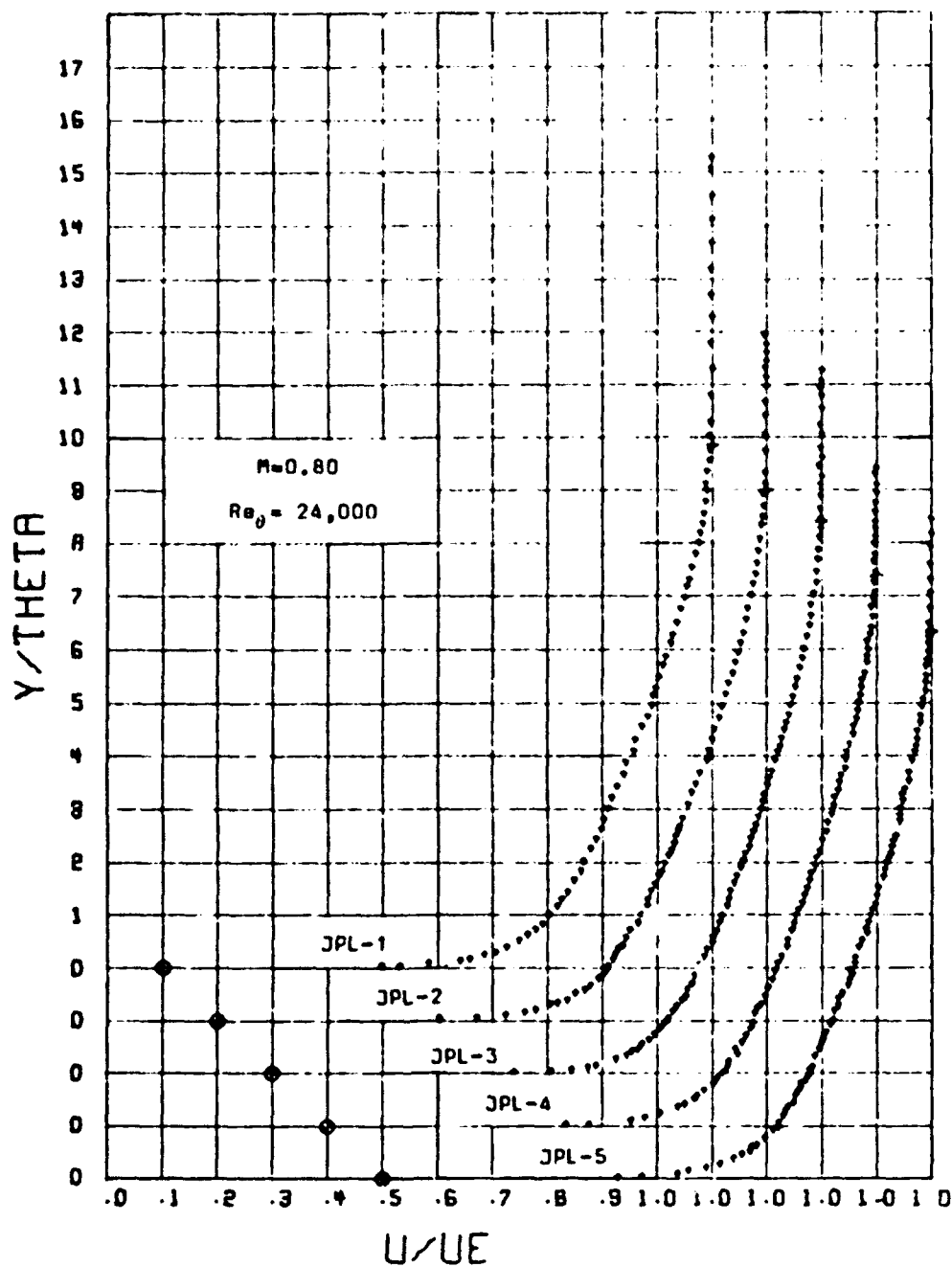


Figure A13. Mean Velocity Profiles.

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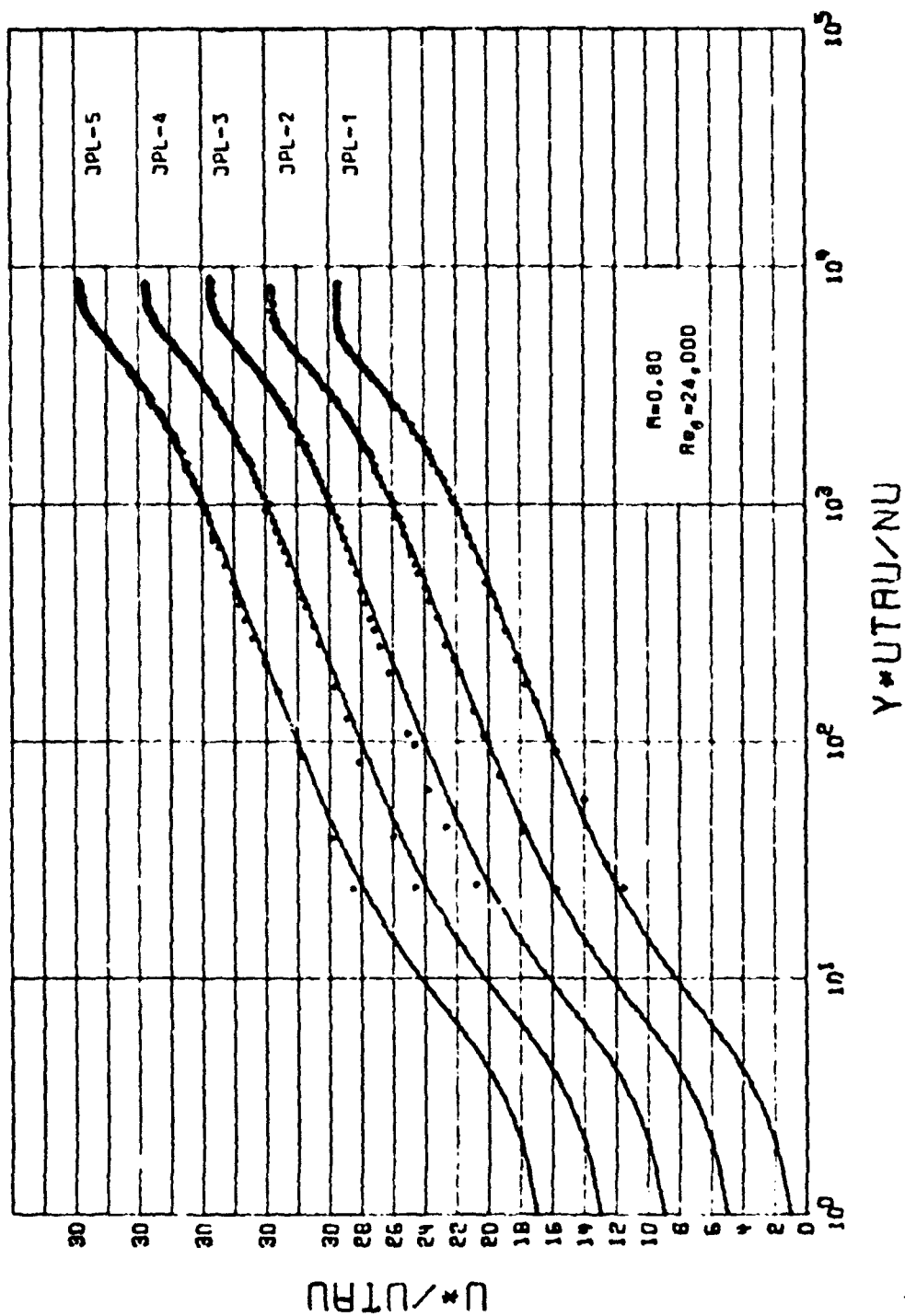


Figure M4. Van Driest Scaled Mean Velocity Profiles.

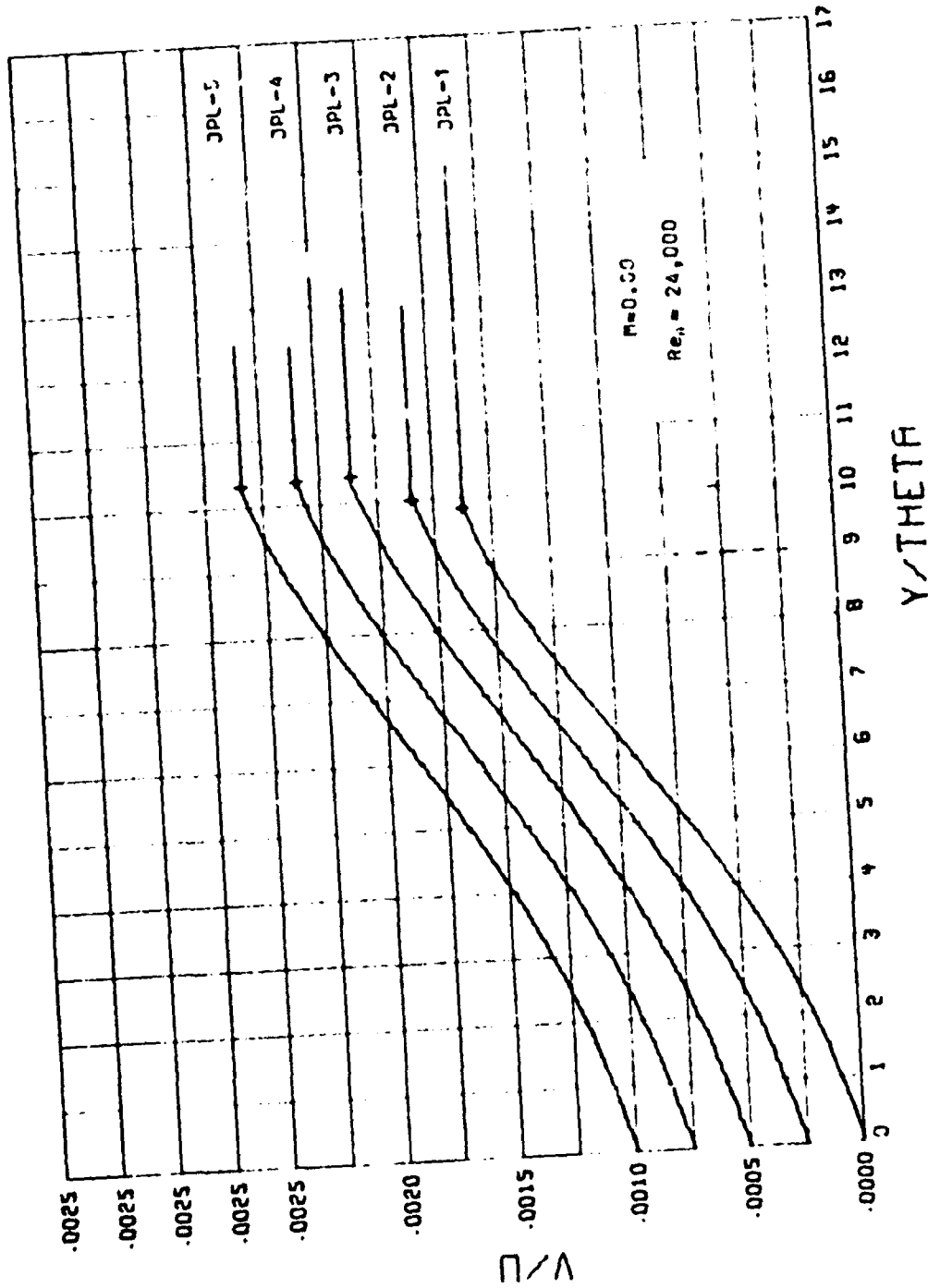


Figure A15. Normal Velocity Distribution.

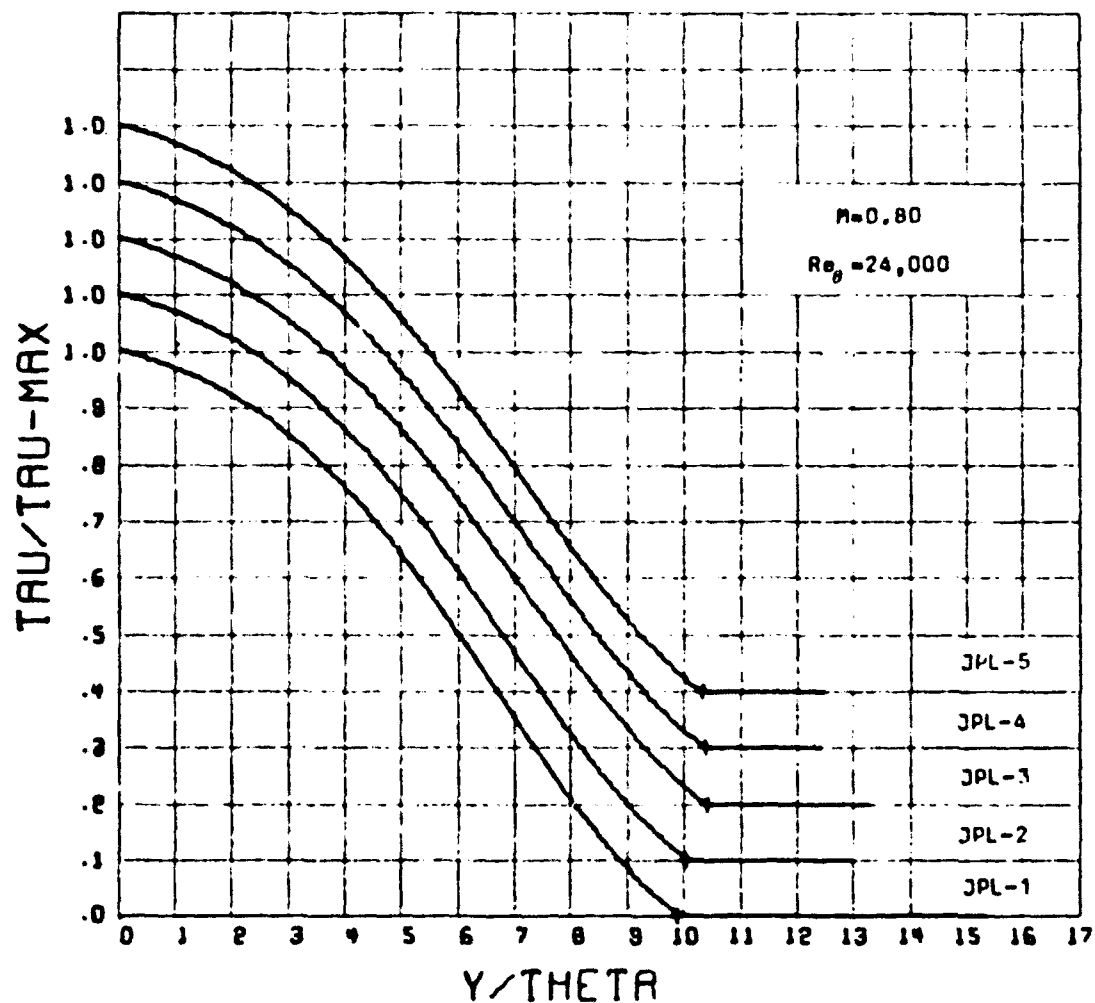


Figure A16. Shear Stress Distribution.

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TOTAL PRESSURE = .133E+06 N/M²
 TOTAL TEMPERATURE = 324.67 DEG-K
 20--48.43 CM

REF-TELAV-3740 91910.
OFLIA SVARO .3225 CM
TELAVO .2108 CM
MUMULLO .2077 CM002/SEC
MO 1.520

LAST SOURCE FLY PARACHUTES

60-31111 - ROOM 2
357m (C88C) 01.91IN
650200 - 01J

DL-0306
DL-0306
DL-0306

V	V/T	V/T ²	V/T ³	V/T ⁴	V/T ⁵	V/T ⁶	V/T ⁷	V/T ⁸	V/T ⁹	V/T ¹⁰	V/T ¹¹	V/T ¹²	V/T ¹³	V/T ¹⁴	V/T ¹⁵	V/T ¹⁶	V/T ¹⁷	V/T ¹⁸	V/T ¹⁹	V/T ²⁰	V/T ²¹	V/T ²²	V/T ²³	V/T ²⁴	V/T ²⁵	V/T ²⁶	V/T ²⁷	V/T ²⁸	V/T ²⁹	V/T ³⁰	V/T ³¹	V/T ³²	V/T ³³	V/T ³⁴	V/T ³⁵	V/T ³⁶	V/T ³⁷	V/T ³⁸	V/T ³⁹	V/T ⁴⁰	V/T ⁴¹	V/T ⁴²	V/T ⁴³	V/T ⁴⁴	V/T ⁴⁵	V/T ⁴⁶	V/T ⁴⁷	V/T ⁴⁸	V/T ⁴⁹	V/T ⁵⁰	V/T ⁵¹	V/T ⁵²	V/T ⁵³	V/T ⁵⁴	V/T ⁵⁵	V/T ⁵⁶	V/T ⁵⁷	V/T ⁵⁸	V/T ⁵⁹	V/T ⁶⁰	V/T ⁶¹	V/T ⁶²	V/T ⁶³	V/T ⁶⁴	V/T ⁶⁵	V/T ⁶⁶	V/T ⁶⁷	V/T ⁶⁸	V/T ⁶⁹	V/T ⁷⁰	V/T ⁷¹	V/T ⁷²	V/T ⁷³	V/T ⁷⁴	V/T ⁷⁵	V/T ⁷⁶	V/T ⁷⁷	V/T ⁷⁸	V/T ⁷⁹	V/T ⁸⁰	V/T ⁸¹	V/T ⁸²	V/T ⁸³	V/T ⁸⁴	V/T ⁸⁵	V/T ⁸⁶	V/T ⁸⁷	V/T ⁸⁸	V/T ⁸⁹	V/T ⁹⁰	V/T ⁹¹	V/T ⁹²	V/T ⁹³	V/T ⁹⁴	V/T ⁹⁵	V/T ⁹⁶	V/T ⁹⁷	V/T ⁹⁸	V/T ⁹⁹	V/T ¹⁰⁰																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

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TABLE 4. B. (CONT.)
W/RE

V (C4)	V/TWETA	V-PLUS	W/RE	ICONT.1	U/M	U-PLUS	TAU/TAU-MAX	V/U
1.115	9.297	6376.	.899	.9789	.8994	27.30	.4344	.000459
1.153	9.448	5641.	.8968	.9831	.8958	27.50	.4127	.000491
1.189	9.616	5156.	.8967	.9875	.8976	27.56	.5018	.000722
1.231	9.811	4385.	.9023	.9811	.9109	27.46	.5656	.000760
1.262	9.944	5518.	.9087	.9827	.9144	27.83	.5673	.000784
1.295	9.167	5443.	.9131	.9831	.9209	27.97	.5269	.000814
1.318	6.291	5763.	.9164	.9843	.9241	28.16	.5176	.000836
1.353	6.419	4918.	.9209	.9844	.9281	28.20	.4901	.000868
1.386	6.526	6763.	.9264	.9840	.9350	28.47	.4490	.000897
1.416	6.798	6165.	.9316	.9844	.9350	28.51	.4511	.000922
1.453	6.951	6367.	.9367	.9877	.9407	28.40	.4244	.000954
1.482	7.076	6273.	.9397	.9841	.9407	28.40	.4244	.000954
1.516	7.277	6718.	.9464	.9854	.9453	28.74	.4608	.000991
1.556	7.447	6866.	.9520	.9856	.9519	28.93	.3319	.001030
1.596	7.647	7566.	.9570	.9856	.9546	29.09	.3472	.001063
1.629	7.764	7566.	.9640	.9872	.9602	29.21	.3174	.001103
1.671	7.935	7566.	.9681	.9879	.9639	29.32	.2950	.001144
1.707	8.081	7673.	.9683	.9879	.9678	29.46	.2681	.001184
1.746	8.276	7673.	.9687	.9879	.9726	29.60	.2387	.001204
1.789	8.601	7726.	.9722	.9844	.9749	29.67	.2104	.001242
1.837	8.716	8516.	.9756	.9851	.9781	29.77	.1829	.001278
1.871	8.814	8184.	.9817	.9848	.9835	29.94	.1470	.001303
1.915	9.081	8172.	.9829	.9844	.9842	29.94	.1198	.001334
1.953	9.259	8578.	.9841	.9879	.9844	30.04	.1197	.001354
1.987	9.473	8133.	.9886	.9877	.9867	30.14	.0845	.001384
2.029	9.723	8111.	.9889	.9881	.9819	30.29	.0376	.001420
2.075	9.956	9181.	.9928	.9845	.9835	30.26	.0498	.001444
2.129	10.298	9184.	.9934	.9845	.9835	30.26	.0370	.001461
2.171	10.298	8444.	.9943	.9844	.9849	30.30	.0192	.001483
2.219	10.474	8444.	.9949	.9849	.9849	30.34	.0037	.001500
2.269	10.623	8766.	.9944	.9844	.9870	30.37	0.0000	.001527
2.323	10.767	9018.	.9934	.9845	.9870	30.39	0.0000	.001507
2.375	10.946	10127.	.9937	.9844	.9849	30.40	0.0000	.001507
2.437	11.379	10492.	1.0001	1.0000	1.0001	30.44	0.0000	.001507
2.498	11.969	10415.	1.0010	1.0002	1.0004	30.49	0.0000	.001507
2.559	12.231	11274.	.9999	.9999	.9999	30.46	0.0000	.001507
2.621	12.623	11437.	.9994	.9997	.9998	30.42	0.0000	.001507
2.681	13.093	11887.	.9993	.9998	.9999	30.46	0.0000	.001507
2.741	13.444	12416.	1.0001	1.0000	1.0001	30.46	0.0000	.001507
2.801	13.816	12792.	1.0001	1.0000	1.0001	30.46	0.0000	.001507
2.861	14.149	13119.	.9997	.9999	.9998	30.45	0.0000	.001507
2.921	14.573	13450.	.9998	.9997	.9999	30.45	0.0000	.001507
2.981	15.116	13773.	1.0014	1.0012	1.0012	30.70	0.0000	.001507
3.041	15.617	14113.	.9993	.9999	.9994	30.45	0.0000	.001507
3.101	16.074	14591.	1.0004	1.0004	1.0004	30.47	0.0000	.001507
3.161	16.576	14991.	1.0004	1.0001	1.0004	30.47	0.0000	.001507
3.221	16.924	14991.	1.0001	1.0000	1.0001	30.46	0.0000	.001507

TABLE A.8. (CONT.)
PROFILE - JPL-2 -- - PINT PRESSURE DATA

EDGE MACM NO. 0.7943 TOTAL PRESSURE = 1334.06 N/mm²
Re = 26.21 CM TOTAL TEMPERATURE = 328.31 DEG-K

U _E = 272.19 M/SEC. RE-DELTA-STAR = 4400.	DELTA STAR = 3410 CM RE-DELTA = 37960.	DELTA = 2343 CM M = 1.314	DELTA = 2.5533 CM					
LEAST SQUARE FIT PARAMETERS U _{STAR} = 9.0444 M/SEC. C = 0.01993 V _{STAR} = 2.419 CM	P ₀ = .5901 V _{MIN} = .039 CM							
Y (CM)	V (CM)	V-PLUS	M/SEC	RHO/RHO _E	U/U _E	U-PLUS	TAU/TAU-MAN	V/U
0.000	2.000	0.	0.000	.0000	0.0000	0.00	1.0000	0.000000
.012	.053	50.	.0001	.0213	.0000	14.06	1.0000	0.000000
.032	.104	100.	.0001	.0213	.0000	14.06	1.0000	0.000000
.050	.145	150.	.0001	.0213	.0000	14.06	1.0000	0.000000
.068	.186	200.	.0001	.0213	.0000	14.06	1.0000	0.000000
.086	.227	250.	.0001	.0213	.0000	14.06	1.0000	0.000000
.104	.268	300.	.0001	.0213	.0000	14.06	1.0000	0.000000
.122	.309	350.	.0001	.0213	.0000	14.06	1.0000	0.000000
.140	.350	400.	.0001	.0213	.0000	14.06	1.0000	0.000000
.158	.391	450.	.0001	.0213	.0000	14.06	1.0000	0.000000
.176	.432	500.	.0001	.0213	.0000	14.06	1.0000	0.000000
.194	.473	550.	.0001	.0213	.0000	14.06	1.0000	0.000000
.212	.514	600.	.0001	.0213	.0000	14.06	1.0000	0.000000
.230	.555	650.	.0001	.0213	.0000	14.06	1.0000	0.000000
.248	.596	700.	.0001	.0213	.0000	14.06	1.0000	0.000000
.266	.637	750.	.0001	.0213	.0000	14.06	1.0000	0.000000
.284	.678	800.	.0001	.0213	.0000	14.06	1.0000	0.000000
.302	.719	850.	.0001	.0213	.0000	14.06	1.0000	0.000000
.320	.760	900.	.0001	.0213	.0000	14.06	1.0000	0.000000
.338	.801	950.	.0001	.0213	.0000	14.06	1.0000	0.000000
.356	.842	1000.	.0001	.0213	.0000	14.06	1.0000	0.000000
.374	.883	1050.	.0001	.0213	.0000	14.06	1.0000	0.000000
.392	.924	1100.	.0001	.0213	.0000	14.06	1.0000	0.000000
.410	.965	1150.	.0001	.0213	.0000	14.06	1.0000	0.000000
.428	1.006	1200.	.0001	.0213	.0000	14.06	1.0000	0.000000
.446	1.047	1250.	.0001	.0213	.0000	14.06	1.0000	0.000000
.464	1.088	1300.	.0001	.0213	.0000	14.06	1.0000	0.000000
.482	1.129	1350.	.0001	.0213	.0000	14.06	1.0000	0.000000
.500	1.170	1400.	.0001	.0213	.0000	14.06	1.0000	0.000000
.518	1.211	1450.	.0001	.0213	.0000	14.06	1.0000	0.000000
.536	1.252	1500.	.0001	.0213	.0000	14.06	1.0000	0.000000
.554	1.293	1550.	.0001	.0213	.0000	14.06	1.0000	0.000000
.572	1.334	1600.	.0001	.0213	.0000	14.06	1.0000	0.000000
.590	1.375	1650.	.0001	.0213	.0000	14.06	1.0000	0.000000
.608	1.416	1700.	.0001	.0213	.0000	14.06	1.0000	0.000000
.626	1.457	1750.	.0001	.0213	.0000	14.06	1.0000	0.000000
.644	1.498	1800.	.0001	.0213	.0000	14.06	1.0000	0.000000
.662	1.539	1850.	.0001	.0213	.0000	14.06	1.0000	0.000000
.680	1.580	1900.	.0001	.0213	.0000	14.06	1.0000	0.000000
.698	1.621	1950.	.0001	.0213	.0000	14.06	1.0000	0.000000
.716	1.662	2000.	.0001	.0213	.0000	14.06	1.0000	0.000000
.734	1.703	2050.	.0001	.0213	.0000	14.06	1.0000	0.000000
.752	1.744	2100.	.0001	.0213	.0000	14.06	1.0000	0.000000
.770	1.785	2150.	.0001	.0213	.0000	14.06	1.0000	0.000000
.788	1.826	2200.	.0001	.0213	.0000	14.06	1.0000	0.000000
.806	1.867	2250.	.0001	.0213	.0000	14.06	1.0000	0.000000
.824	1.908	2300.	.0001	.0213	.0000	14.06	1.0000	0.000000
.842	1.949	2350.	.0001	.0213	.0000	14.06	1.0000	0.000000
.860	1.990	2400.	.0001	.0213	.0000	14.06	1.0000	0.000000
.878	2.031	2450.	.0001	.0213	.0000	14.06	1.0000	0.000000
.896	2.072	2500.	.0001	.0213	.0000	14.06	1.0000	0.000000
.914	2.113	2550.	.0001	.0213	.0000	14.06	1.0000	0.000000
.932	2.154	2600.	.0001	.0213	.0000	14.06	1.0000	0.000000
.950	2.195	2650.	.0001	.0213	.0000	14.06	1.0000	0.000000
.968	2.236	2700.	.0001	.0213	.0000	14.06	1.0000	0.000000
.986	2.277	2750.	.0001	.0213	.0000	14.06	1.0000	0.000000
1.004	2.318	2800.	.0001	.0213	.0000	14.06	1.0000	0.000000
1.022	2.359	2850.	.0001	.0213	.0000	14.06	1.0000	0.000000
1.040	2.400	2900.	.0001	.0213	.0000	14.06	1.0000	0.000000

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TABLE A.8. (CONT.)

V (CM)	V/T*FT	V-PLUS	P/RE	RAM/REME	U/H	U-PLUS	TAU/TAU-MAX	V/U
1.104	4.616	47.80	.8668	.9750	.8778	26.72	.7170	.000531
1.146	4.801	49.18	.8711	.9757	.8818	26.85	.6945	.000558
1.174	4.916	50.54	.8760	.9764	.8848	26.99	.6700	.000580
1.203	5.073	51.96	.8814	.9774	.8916	27.15	.6466	.000604
1.238	5.195	53.22	.8867	.9781	.8969	27.26	.6207	.000624
1.277	5.340	54.91	.8905	.9792	.9009	27.41	.6116	.000653
1.305	5.478	56.11	.8970	.9803	.9054	27.60	.6178	.000673
1.342	5.612	57.69	.8964	.9802	.9074	27.58	.5993	.000700
1.371	5.745	58.95	.9011	.9811	.9097	27.72	.5846	.000722
1.407	5.906	60.68	.9043	.9820	.9146	27.87	.5659	.000748
1.437	6.037	61.79	.9103	.9827	.9182	27.99	.5499	.000771
1.476	6.194	63.37	.9145	.9834	.9221	28.11	.5302	.000799
1.508	6.330	64.84	.9186	.9842	.9257	28.22	.5117	.000825
1.553	6.517	66.76	.9232	.9851	.9302	28.36	.4874	.000859
1.596	6.698	68.61	.9275	.9859	.9341	28.49	.4636	.000892
1.625	6.821	69.87	.9329	.9869	.9390	28.64	.4474	.000914
1.654	6.958	71.28	.9383	.9874	.9422	28.74	.4289	.000939
1.716	7.274	74.61	.9440	.9890	.9469	28.96	.3853	.000994
1.770	7.628	76.09	.9504	.9902	.9531	29.15	.3660	.001024
1.814	7.831	77.16	.9517	.9905	.9562	29.19	.3499	.001060
1.840	7.944	78.47	.9550	.9911	.9593	29.28	.3215	.001093
1.879	8.078	80.78	.9595	.9920	.9634	29.41	.3047	.001105
1.913	8.190	82.24	.9618	.9928	.9673	29.53	.2857	.001130
1.946	8.344	83.57	.9647	.9934	.9689	29.61	.2669	.001152
1.981	8.433	85.15	.9656	.9931	.9684	29.68	.2448	.001178
2.004	8.619	86.24	.9704	.9941	.9733	29.72	.2351	.001195
2.037	8.447	87.55	.9729	.9944	.9755	29.79	.2188	.001214
2.070	8.486	89.07	.9754	.9951	.9778	29.86	.2014	.001238
2.101	8.819	91.16	.9760	.9952	.9783	29.88	.1850	.001259
2.136	8.941	91.61	.9787	.9959	.9817	29.99	.1676	.001281
2.169	9.101	93.73	.9814	.9963	.9833	30.04	.1511	.001302
2.204	9.204	94.32	.9837	.9967	.9853	30.10	.1348	.001318
2.230	9.357	95.85	.9853	.9968	.9858	30.12	.1218	.001339
2.256	9.458	96.84	.9874	.9975	.9888	30.21	.1107	.001353
2.289	9.602	98.94	.9898	.9982	.9909	30.28	.0952	.001372
2.324	9.879	101.20	.9912	.9989	.9920	30.31	.0869	.001407
2.378	9.941	102.73	.9919	.9983	.9927	30.33	.0871	.001419
2.419	10.151	103.94	.9934	.9986	.9940	30.36	.0814	.001439
2.453	10.294	105.66	.9941	.9988	.9947	30.40	.0787	.001454
2.489	10.444	106.98	.9967	.9993	.9970	30.47	.0744	.001469
2.519	10.577	108.20	.9981	.9992	.9985	30.46	.0684	.001481
2.561	10.764	111.00	.9967	.9991	.9970	30.47	0.0000	.001489
2.597	10.897	111.62	.9967	.9993	.9970	30.47	0.0000	.001489
2.684	11.245	111.53	.9984	.9994	.9985	30.52	0.0000	.001489
2.746	11.604	118.88	.9989	.9997	.9980	30.53	0.0000	.001489
2.843	11.931	122.11	.9995	.9999	.9995	30.55	0.0000	.001489
2.907	12.198	124.94	1.0004	1.0000	1.0003	30.58	0.0000	.001489
2.995	12.571	128.74	1.0000	1.0000	1.0000	30.57	0.0000	.001489
3.073	12.804	132.09	1.0004	1.0000	1.0003	30.58	0.0000	.001489
3.141	13.143	135.04	1.0002	1.0000	1.0002	30.57	0.0000	.001489
3.235	13.578	138.08	1.0006	1.0001	1.0005	30.58	0.0000	.001489
3.319	13.929	142.88	1.0000	1.0000	1.0000	30.57	0.0000	.001489
3.412	14.314	146.17	.9996	.9999	.9997	30.56	0.0000	.001489
3.499	14.644	150.03	1.0000	1.0001	1.0002	30.59	0.0000	.001489
3.553	14.910	142.73	1.0002	1.0000	1.0002	30.57	0.0000	.001489
3.657	15.347	152.00	.9995	.9999	.9995	30.55	0.0000	.001489

TABLE A.8. (CONT.)
PROFILE - JPL-3 - - - PITOT PRESSURE DATAEDGE MACH NO. = .7940
X = -7.62 CM
TOTAL PRESSURE = .1335E+04 N/M²
TOTAL TEMPERATURE = 324.67 DEG-KUE = 270.59 M/SEC
RE-DELTA-STAR = 60480.
DELTA STAR = .3812 CM
RE-THETA = 40190.
THETA = .2524 CM
MUMALL = .2045 CM²/SEC
M = 1.509LEAST SQUARE FIT PARAMETERS
UTANG = 8.9945 M/SEC
CHISQR = .1032E-04
CP = .001987
YMAI = 2.580 CM
DI = .5552
YMAI = .744 CM
DELTA = 2.7494 CM

Y (CM)	Y/TMETH	Y-PLUS	M/E	RM/RMDE	U/UF	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.8994	0.0000	0.00	1.0000	0.000000
.010	.040	44.	.4335	.9184	.4524	13.65	1.0000	0.000000
.015	.045	5.	.4675	.9215	.4470	14.71	.9997	.000000
.020	.050	127.	.540	.9289	.4607	16.95	.9994	.000000
.044	.174	193.	.5760	.9329	.4963	18.04	.9970	.000000
.044	.174	294.	.6124	.9373	.4329	19.17	.9944	.000019
.047	.181	381.	.6310	.9394	.4329	19.17	.9923	.000025
.047	.181	442.	.6446	.9415	.4329	19.17	.9923	.000025
.111	.442	442.	.6446	.9415	.4329	19.17	.9923	.000025
.110	.418	564.	.6630	.9437	.4329	20.20	.9933	.000033
.154	.613	674.	.6744	.9452	.4329	20.20	.9933	.000033
.174	.699	748.	.6983	.9471	.4329	21.04	.9916	.000044
.200	.794	874.	.6973	.9484	.4329	21.46	.9905	.000055
.224	.905	954.	.7053	.9495	.4329	21.73	.9870	.000063
.274	1.094	1154.	.7183	.9514	.4329	21.97	.9877	.000073
.295	1.171	1244.	.7240	.9524	.4329	22.36	.9854	.000089
.335	1.327	1460.	.7390	.9544	.4329	22.65	.9817	.000097
.365	1.444	1593.	.7459	.9554	.4329	22.94	.9749	.000111
.384	1.539	1692.	.7500	.9567	.4329	23.18	.9694	.000123
.416	1.640	1814.	.7517	.9563	.4329	23.36	.9651	.000131
.440	1.740	1944.	.7507	.9575	.4329	23.59	.9597	.000142
.477	1.891	2074.	.7651	.9583	.4329	23.75	.9531	.000155
.539	2.014	2218.	.7710	.9592	.4329	23.96	.9473	.000164
.573	2.062	2301.	.7721	.9594	.4329	24.23	.9405	.000179
.587	2.064	2472.	.7811	.9604	.4329	24.23	.9374	.000184
.604	2.344	2569.	.7953	.9615	.4329	24.36	.9304	.000215
.642	2.545	2799.	.7934	.9624	.4329	24.40	.9293	.000234
.675	2.675	2942.	.7995	.9637	.4329	24.78	.9210	.000251
.717	2.922	3213.	.8041	.9651	.4329	25.03	.9143	.000264
.772	3.054	3463.	.8130	.9659	.4329	25.14	.9074	.000274
.812	3.219	3541.	.8194	.9669	.4329	25.35	.9029	.000284
.835	3.309	3639.	.8241	.9678	.4329	25.51	.8961	.000294
.874	3.480	3827.	.8280	.9684	.4329	25.67	.8881	.000304
.910	3.606	3964.	.8333	.9691	.4329	25.78	.8804	.000314
.934	3.717	4087.	.8381	.9701	.4329	26.02	.8714	.000324
.970	3.847	4274.	.8405	.9705	.4329	26.09	.8624	.000334
1.005	3.944	4381.	.8467	.9715	.4329	26.17	.8504	.000349
1.037	4.109	4519.	.8508	.9727	.4329	26.29	.8402	.000357
1.070	4.240	4672.	.8555	.9730	.4329	26.43	.8372	.000364
1.107	4.345	4801.	.8613	.9740	.4329	26.60	.8343	.000374
1.135	4.494	4945.	.8634	.9744	.4329	26.66	.8264	.000384
1.170	4.637	5103.	.8692	.9754	.4329	26.83	.8187	.000394

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TABLE A.8. (CONT.)

Y (CM)	Y/TIETA	Y-PLUS	W/PE	RHO/RHME	U/HF	U-PLUS	TAU/TAU-MAX	V/U
1.196	4.738	5210.	.8724	.9760	.AR30	26.92	.7086	.000531
1.229	4.868	5354.	.8715	.9758	.AR22	26.89	.6951	.000551
1.244	5.009	5509.	.8777	.9769	.AR80	27.08	.AF02	.000574
1.262	5.120	5631.	.8822	.9785	.P922	27.21	.AA84	.000591
1.319	5.274	5767.	.8867	.9785	.P964	27.34	.AA84	.000599
1.346	5.482	6040.	.8928	.9794	.P971	27.52	.AA84	.000599
1.419	5.623	6184.	.8966	.9802	.P954	27.62	.AA84	.000599
1.447	5.734	6306.	.9020	.9812	.P954	27.78	.AA84	.000599
1.473	5.834	6416.	.9051	.9818	.P954	27.88	.AA84	.000599
1.504	5.945	6560.	.9102	.9827	.P954	28.02	.AA84	.000599
1.546	6.124	6737.	.9139	.9834	.P954	28.13	.AA84	.000599
1.582	6.267	6892.	.9187	.9843	.P954	28.27	.AA84	.000599
1.623	6.428	7069.	.9221	.9849	.P954	28.37	.AA84	.000599
1.653	6.548	7202.	.9251	.9855	.P954	28.45	.AA84	.000599
1.673	6.627	7290.	.9251	.9855	.P954	28.49	.AA84	.000599
1.705	6.755	7429.	.9251	.9855	.P954	28.56	.AA84	.000599
1.732	6.860	7545.	.9251	.9855	.P954	28.72	.AA84	.000599
1.770	7.011	7711.	.9251	.9855	.P954	28.84	.AA84	.000599
1.808	7.162	7877.	.9251	.9855	.P954	28.92	.AA84	.000599
1.835	7.268	7993.	.9251	.9855	.P954	28.95	.AA84	.000599
1.873	7.415	8159.	.9251	.9855	.P954	29.11	.AA84	.000599
1.935	7.665	8630.	.9501	.9802	.P954	29.18	.AA84	.000599
1.965	7.784	8563.	.9548	.9811	.P954	29.31	.AA84	.000599
2.001	7.927	8718.	.9568	.9815	.P954	29.37	.AA84	.000599
2.032	8.047	8850.	.9603	.9821	.P954	29.47	.AA84	.000599
2.062	8.158	8953.	.9642	.9829	.P954	29.58	.AA84	.000599
2.073	8.314	9144.	.9652	.9831	.P954	29.61	.AA84	.000599
2.125	8.420	9260.	.9689	.9838	.P954	29.72	.AA84	.000599
2.149	8.591	9448.	.9716	.9844	.P954	29.80	.AA84	.000599
2.202	8.721	9592.	.9712	.9843	.P954	29.78	.AA84	.000599
2.230	8.832	9713.	.9767	.9853	.P954	29.94	.AA84	.000599
2.270	8.993	9820.	.9775	.9855	.P954	29.96	.AA84	.000599
2.308	9.144	10054.	.9818	.9863	.P954	30.07	.AA84	.000599
2.374	9.405	10344.	.9854	.9870	.P954	30.19	.AA84	.000599
2.415	9.544	10521.	.9843	.9868	.P954	30.16	.AA84	.000599
2.443	9.697	10665.	.9875	.9875	.P954	30.25	.AA84	.000599
2.480	9.863	10847.	.9912	.9882	.P954	30.36	.AA84	.000599
2.537	10.049	11052.	.9901	.9880	.P954	30.32	.AA84	.000599
2.580	10.220	11405.	.9932	.9884	.P954	30.42	.AA84	.000599
2.618	10.371	11406.	.9936	.9887	.P954	30.43	.AA84	.000599
2.661	10.542	11594.	.9949	.9889	.P954	30.46	.AA84	.000599
2.705	10.713	11782.	.9958	.9891	.P954	30.49	.AA84	.000599
2.745	10.874	11959.	.9966	.9893	.P954	30.51	.AA84	.000599
2.795	11.030	12131.	.9973	.9894	.P954	30.53	.AA84	.000599
2.821	11.174	12291.	.9973	.9894	.P954	30.52	.AA84	.000599
2.870	11.488	12434.	.9991	.9898	.P954	30.50	.AA84	.000599
2.971	11.749	12944.	.9988	.9898	.P954	30.57	.AA84	.000599
3.055	12.101	13309.	.9995	.9899	.P954	30.57	.AA84	.000599
3.144	12.454	13696.	.9991	.9898	.P954	30.58	.AA84	.000599
3.218	12.745	14017.	1.0004	1.0000	.P954	30.62	.AA84	.000599
3.305	13.092	14394.	1.0004	1.0000	.P954	30.61	.AA84	.000599
3.384	13.404	14742.	1.0002	1.0000	.P954	30.61	.AA84	.000599
3.454	13.641	15046.	1.0002	1.0000	.P954	30.61	.AA84	.000599
3.536	14.008	15406.	1.0004	1.0000	.P954	30.62	.AA84	.000599
3.619	14.335	15765.	1.0004	1.0000	.P954	30.62	.AA84	.000599
3.698	14.647	16104.	.9997	.9899	.P954	30.60	.AA84	.000599

TABLE A 8. (CONT.)
 PROFILE - JPL-4 -- - PITOT PRESSURE DATA
 EDGE MACH NO. = .7921 TOTAL PRESSURE = .1335E+06 N/M²
 X = 0.00 CM TOTAL TEMPERATURE = 328.31 DEG-K

Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOE	U/U	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.9000	0.0000	0.00	1.0000	0.000000
.010	.038	43.	.4370	.9191	.4549	13.79	1.0000	0.000100
.017	.067	76.	.4966	.9266	.5166	15.66	.9596	.000032
.027	.105	119.	.5618	.9393	.5670	17.04	.4986	.000004
.049	.187	212.	.5760	.9332	.5953	18.09	.0967	.000012
.068	.250	293.	.6055	.9366	.6754	18.09	.0967	.000018
.077	.337	375.	.6241	.9380	.6661	10.56	.0026	.000074
.106	.404	457.	.6658	.9416	.6665	20.19	.0004	.000119
.121	.467	22.	.6516	.9439	.6712	20.47	.9886	.000035
.140	.534	606.	.6521	.9439	.6816	20.72	.0002	.000141
.152	.577	452.	.6703	.9460	.6895	20.96	.0467	.000155
.177	.674	781.	.6868	.9471	.7057	21.44	.6513	.000193
.210	.770	881.	.6925	.9472	.7132	21.70	.9774	.000007
.231	.876	600.	.6942	.9487	.7111	21.81	.9737	.000170
.264	.972	1000.	.7133	.9500	.7315	22.74	.0000	.000170
.287	1.068	1220.	.7210	.9520	.7300	22.49	.0657	.000100
.306	1.155	1406.	.7210	.9520	.7300	22.49	.9673	.000100
.327	1.242	1601.	.7208	.9512	.7675	22.75	.0635	.000113
.355	1.364	1523.	.7370	.9543	.7646	25.07	.0638	.000124
.387	1.468	1650.	.7460	.9553	.7612	25.18	.9482	.000113
.415	1.563	1761.	.7601	.9561	.7661	25.36	.0043	.000121
.431	1.634	1761.	.7529	.9567	.7668	25.65	.0601	.000120
.451	1.700	1931.	.7549	.9573	.7716	25.51	.9315	.000147
.470	1.730	2178.	.7624	.9581	.7701	25.74	.0000	.000150
.485	1.806	2309.	.7661	.9587	.7824	25.84	.9234	.000172
.512	1.941	2307.	.7721	.9596	.7981	26.27	.0169	.000141
.534	2.041	2436.	.7768	.9606	.7927	26.16	.0179	.000152
.566	2.167	2570.	.7868	.9613	.7993	26.36	.0051	.000104
.611	2.382	2760.	.7907	.9633	.8060	26.65	.0049	.000124
.646	2.650	2760.	.7907	.9633	.8131	26.27	.0074	.000138
.678	2.715	3070.	.8004	.9641	.8165	26.64	.0780	.000100
.714	2.879	3264.	.8061	.9649	.8204	25.73	.0669	.000174
.750	3.013	3456.	.8164	.9657	.8276	25.31	.6476	.000170
.785	3.153	3666.	.8203	.9673	.8341	26.36	.0672	.000107
.821	3.273	3730.	.8268	.9680	.8383	26.59	.0102	.000144
.853	3.402	3730.	.8268	.9680	.8401	25.64	.0272	.000100
.883	3.553	4026.	.8335	.9694	.8465	25.85	.0165	.000100
.912	3.724	4211.	.8407	.9706	.8533	26.04	.0070	.000102
.937	3.970	4375.	.8424	.9710	.8551	26.11	.7064	.000102
.961	4.083	4501.	.8497	.9722	.8618	26.32	.7734	.000102
.984	4.194	4736.	.8527	.9737	.8644	26.41	.7611	.000467

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TABLE A.8. (CONT.)
M/ME RND/RNDF

Y (CM)	V/TWETA	V-PLUS	M/ME	RND/RNDF	U/IE	I1-PLUS	TAU/TAU-MAX	V/U
1.148	4.352	4919.	.8587	.9737	.8702	26.59	.7457	.000471
1.149	4.487	5071.	.8631	.9745	.8723	26.72	.7326	.000491
1.171	4.631	5236.	.8677	.9753	.8747	26.85	.7183	.000513
1.209	4.775	5398.	.8736	.9761	.8842	27.03	.7035	.000536
1.204	4.915	5555.	.8784	.9772	.8884	27.17	.6884	.000554
1.336	5.064	5726.	.8830	.9779	.8929	27.30	.6731	.000574
1.374	5.209	5887.	.8861	.9785	.8957	27.39	.6573	.000595
1.417	5.372	6072.	.8912	.9794	.9006	27.54	.6391	.000631
1.443	5.544	6248.	.8954	.9801	.9044	27.66	.6193	.000660
1.503	5.700	6442.	.9023	.9816	.9108	27.86	.6014	.000686
1.550	5.978	6644.	.9071	.9823	.9153	28.00	.5863	.000714
1.595	6.044	6836.	.9102	.9838	.9181	28.09	.5599	.000745
1.633	6.210	7019.	.9135	.9836	.9212	28.19	.5399	.000773
1.673	6.345	7172.	.9180	.9847	.9253	28.32	.5231	.000796
1.713	6.494	7340.	.9239	.9853	.9307	28.49	.5044	.000822
1.745	6.643	7509.	.9287	.9858	.9333	28.57	.4845	.000848
1.748	6.778	7681.	.9300	.9864	.9363	28.67	.4683	.000872
1.871	6.903	7803.	.9335	.9871	.9384	28.77	.4522	.000894
1.850	7.048	7956.	.9381	.9880	.9438	28.90	.4333	.000919
1.894	7.187	8126.	.9408	.9885	.9463	29.04	.4154	.000943
1.940	7.317	8271.	.9441	.9891	.9493	29.08	.3965	.000966
1.945	7.457	8423.	.9496	.9901	.9541	29.23	.3810	.000989
2.006	7.604	8597.	.9547	.9909	.9579	29.10	.3609	.001016
2.004	7.770	8792.	.9547	.9911	.9590	29.34	.3396	.001043
2.125	7.914	8966.	.9566	.9915	.9620	29.44	.3209	.001068
2.125	8.050	9109.	.9592	.9920	.9630	29.51	.3073	.001092
2.160	8.223	9296.	.9623	.9924	.9659	29.60	.2913	.001119
2.213	8.391	9486.	.9696	.9930	.9723	29.81	.2599	.001144
2.263	8.579	9686.	.9721	.9945	.9748	29.89	.2345	.001174
2.337	8.747	9887.	.9745	.9949	.9759	29.95	.2157	.001203
2.443	8.882	10339.	.9755	.9951	.9778	29.98	.1984	.001223
2.345	9.041	10219.	.9803	.9961	.9823	30.12	.1805	.001247
2.429	9.210	10409.	.9815	.9963	.9833	30.16	.1609	.001272
2.470	9.387	10522.	.9842	.9968	.9857	30.23	.1397	.001298
2.522	9.561	10607.	.9850	.9972	.9873	30.24	.1218	.001320
2.564	9.729	10686.	.9881	.9974	.9893	30.35	.1044	.001341
2.554	9.869	11155.	.9900	.9980	.9910	30.40	.0807	.001360
2.621	10.042	11372.	.9920	.9984	.9924	30.46	.0794	.001383
2.671	10.201	11570.	.9937	.9987	.9943	30.51	.0574	.001399
2.729	10.364	11696.	.9928	.9985	.9935	30.49	.0448	.001415
2.771	10.504	11873.	.9948	.9989	.9954	30.54	.0313	.001431
2.857	10.684	12043.	.9952	.9990	.9957	30.55	.0148	.001449
2.857	10.837	12243.	.9958	.9991	.9962	30.56	.0000	.001462
2.898	10.984	12417.	.9980	.9994	.9982	30.63	0.0000	.001469
2.947	11.174	12629.	.9974	.9994	.9982	30.61	0.0000	.001469
3.012	11.419	12907.	.9987	.9994	.9982	30.63	0.0000	.001469
3.006	11.737	13266.	.9991	.9994	.9982	30.64	0.0000	.001469
3.114	12.049	13642.	.9994	.9994	.9982	30.69	0.0000	.001469
3.271	12.401	14017.	.9995	.9999	.9985	30.67	0.0000	.001469
3.377	12.729	14387.	1.0000	1.0000	1.0000	30.69	0.0000	.001469
3.444	13.104	14812.	.9987	.9997	.9989	30.65	0.0000	.001469
3.544	13.437	15187.	.9989	.9997	.9990	30.65	0.0000	.001469
3.681	13.674	15144.	1.0004	1.0001	1.0005	30.70	0.0000	.001469
3.651	13.841	15444.	1.0004	1.0001	1.0003	30.70	0.0000	.001469
3.695	14.010	15835.	.9995	.9999	.9995	30.67	0.0000	.001469

TABLE A 8. (CONT.)
PROFILE - JPL-5 -- - PITOT PRESSURE DATA

EDGE MACH NO. = .7919		TOTAL PRESSURE = .13776-06 N/mm ²		TOTAL TEMPERATURE = 328.55 DEG-K		M = 1.512		DELTA = 2.9659 CM	
X = 7.62 CM		DELTA STAR = .4155 CM		RE-THETA = 42600.		TMEAT = .2747 CM		MINALL = .2105 CM	
UE = 271.55 M/SEC		RE-DELTA-STAR = 64440.		LEAST SQUARE FIT PARAMETERS		P1 = .5867		P2 = .024 CM	
UTAU = 8.9444 M/SEC		CF = .001953		YMAX = 2.806 CM		U/UIE		U-PLUS	
CMISOR = .10025-04		Y-PLUS		M/NE		RND/RMSE		TAU/TAU-MAX	
Y (CM)	Y/THETA	Y-PLUS	M/NE	RND/RMSE	U/UIE	U-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.8000	0.0000	0.00	1.0000	0.000000	
.010	.036	43.	.4350	.9190	.4538	13.42	1.0090	0.000000	
.024	.087	102.	.5023	.9253	.5222	15.92	.9990	.000004	
.050	.184	215.	.5700	.9325	.5903	18.12	.9968	.000312	
.066	.240	280.	.6018	.9362	.6220	19.00	.9953	.000014	
.088	.323	377.	.6191	.9383	.6391	19.53	.9930	.000023	
.116	.425	496.	.6434	.9416	.6443	20.29	.9899	.000031	
.132	.440	541.	.6625	.9439	.6819	20.96	.9881	.000034	
.147	.469	581.	.6727	.9452	.6914	21.16	.9834	.000048	
.167	.484	798.	.6835	.9467	.7025	21.50	.9811	.000053	
.217	.790	922.	.6938	.9481	.7125	21.81	.9772	.000062	
.246	.895	1044.	.7059	.9497	.7234	22.16	.9732	.000071	
.273	.993	1160.	.7122	.9507	.7334	22.57	.9693	.000079	
.302	1.100	1284.	.7186	.9516	.7347	22.57	.9649	.000149	
.334	1.215	1419.	.7225	.9522	.7434	22.08	.9600	.000169	
.361	1.317	1537.	.7354	.9541	.7529	23.04	.9555	.000104	
.395	1.405	1640.	.7427	.9552	.7607	23.30	.9515	.000114	
.411	1.497	1748.	.7467	.9555	.7619	23.34	.9472	.000124	
.442	1.647	1864.	.7509	.9564	.7678	23.54	.9402	.000143	
.445	1.765	2061.	.7615	.9580	.7700	23.96	.9340	.000151	
.515	1.876	2190.	.7626	.9581	.7791	23.89	.9282	.000162	
.546	2.024	2363.	.7701	.9593	.7843	24.12	.9202	.000177	
.594	2.163	2525.	.7789	.9607	.7867	24.38	.9174	.000141	
.626	2.279	2660.	.7800	.9609	.7857	24.42	.9256	.000203	
.657	2.394	2795.	.7849	.9615	.7874	24.56	.9264	.000214	
.685	2.496	2914.	.7901	.9624	.7956	24.72	.9223	.000227	
.715	2.607	3043.	.7963	.9634	.8112	24.90	.9152	.000240	
.755	2.755	3216.	.8036	.9644	.8182	25.12	.9154	.000257	
.797	2.844	3345.	.8064	.9647	.8189	25.15	.9178	.000270	
.828	3.014	3518.	.8109	.9657	.8252	25.34	.9173	.000284	
.855	3.115	3637.	.8154	.9665	.8294	25.44	.9169	.000300	
.892	3.249	3793.	.8188	.9670	.8327	25.58	.9168	.000317	
.922	3.354	3917.	.8262	.9682	.8364	25.80	.9154	.000331	
.947	3.452	4112.	.8344	.9694	.8433	26.04	.9187	.000352	
1.003	3.652	4263.	.8358	.9698	.8487	26.08	.9174	.000370	
1.028	3.744	4371.	.8411	.9707	.8537	26.24	.9164	.000382	
1.049	3.934	4592.	.8425	.9719	.8550	26.28	.9169	.000398	
1.112	4.049	4727.	.8491	.9721	.8432	26.48	.9125	.000424	
1.143	4.143	4856.	.8512	.9724	.8432	26.56	.9122	.000441	
1.177	4.245	4902.	.8532	.9728	.8451	26.67	.9103	.000450	
1.214	4.419	5154.	.8506	.9749	.8720	26.82	.9172	.000469	

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TABLE A.8. (CONT.)
M/ME

V (°M)	V/TMETH	V-PLUS	M/ME	(CONT.) RM/RMNE	U/ME	U-PLUS	TAU/TAI-MAX	V/U
1.247	4.576	5342.	.8645	.9751	.8775	26.99	.7215	.009504
1.247	4.647	5471.	.8704	.9757	.8811	27.11	.7101	.009501
1.310	4.744	5655.	.8733	.9762	.8819	27.19	.6934	.009504
1.343	4.844	5795.	.8776	.9770	.8877	27.31	.6807	.009505
1.343	4.919	5919.	.8839	.9781	.8937	27.50	.6691	.009502
1.470	5.353	6249.	.8897	.9791	.8991	27.48	.6373	.009504
1.501	5.444	6378.	.8940	.9799	.9031	27.80	.6242	.009507
1.549	5.407	6545.	.8990	.9809	.9078	27.95	.6076	.009507
1.579	5.750	6713.	.9027	.9811	.9084	28.00	.5905	.009505
1.611	5.866	6948.	.9060	.9817	.9123	28.09	.5764	.009505
1.621	6.009	7015.	.9106	.9829	.9184	28.29	.5598	.009507
1.629	6.148	7177.	.9140	.9835	.9216	28.39	.5415	.009504
1.719	6.259	7306.	.9190	.9846	.9262	28.53	.5275	.009507
1.740	6.407	7479.	.9217	.9849	.9287	28.61	.5087	.009507
1.795	6.534	7630.	.9240	.9857	.9327	28.74	.4920	.009503
1.833	6.675	7792.	.9275	.9860	.9360	28.78	.4741	.009504
1.846	6.795	7932.	.9322	.9869	.9384	28.92	.4584	.009507
1.844	6.911	8087.	.9347	.9873	.9406	28.99	.4432	.009507
1.935	7.045	8274.	.9381	.9880	.9438	29.09	.4255	.009507
1.948	7.145	8364.	.9409	.9885	.9464	29.14	.4094	.009507
2.000	7.281	8499.	.9428	.9888	.9480	29.23	.3943	.009507
2.033	7.431	8639.	.9472	.9897	.9521	29.36	.3784	.009503
2.075	7.553	8817.	.9500	.9902	.9544	29.44	.3581	.009503
2.110	7.653	8948.	.9544	.9911	.9587	29.57	.3410	.009503
2.139	7.789	9092.	.9567	.9911	.9590	29.58	.3270	.009507
2.147	7.891	9211.	.9596	.9920	.9634	29.72	.3134	.009507
2.218	8.039	9384.	.9611	.9923	.9648	29.74	.2942	.009507
2.247	8.182	9551.	.9650	.9931	.9684	29.88	.2755	.009503
2.273	8.274	9694.	.9682	.9933	.9694	29.91	.2636	.009503
2.310	8.409	9846.	.9702	.9935	.9704	29.94	.2444	.009503
2.330	8.515	9940.	.9731	.9941	.9731	30.03	.2278	.009503
2.373	8.640	10085.	.9738	.9948	.9743	30.13	.2173	.009503
2.411	8.778	10247.	.9754	.9951	.9740	30.14	.2092	.009503
2.433	8.844	10350.	.9749	.9954	.9791	30.22	.1895	.009503
2.533	9.185	10722.	.9820	.9965	.9842	30.37	.1518	.009507
2.556	9.305	10862.	.9825	.9965	.9842	30.38	.1380	.009507
2.593	9.439	11019.	.9856	.9971	.9870	30.47	.1231	.009505
2.624	9.540	11159.	.9863	.9973	.9877	30.49	.1099	.009507
2.649	9.717	11343.	.9890	.9978	.9901	30.57	.0934	.009503
2.714	9.897	11553.	.9909	.9981	.9919	30.62	.0752	.009503
2.748	10.077	11784.	.9916	.9983	.9924	30.64	.0579	.009503
2.804	10.214	11926.	.9925	.9985	.9933	30.67	.0452	.009503
2.842	10.344	12077.	.9937	.9987	.9943	30.70	.0338	.009503
2.887	10.512	12271.	.9957	.9991	.9961	30.76	.0202	.009503
2.923	10.641	12422.	.9961	.9992	.9965	30.77	.0101	.009507
2.947	10.910	12735.	.9976	.9995	.9978	30.82	0.0000	.009504
3.042	11.074	12929.	.9974	.9994	.9977	30.81	0.0000	.009504
3.115	11.339	13237.	.9976	.9995	.9978	30.82	0.0000	.009504
3.147	11.603	13545.	.9989	.9997	.9980	30.85	0.0000	.009504
3.274	11.917	13911.	.9981	.9996	.9983	30.83	0.0000	.009504
3.351	12.199	14241.	.9992	.9999	.9993	30.84	0.0000	.009504
3.439	12.504	14597.	1.0007	1.0001	1.0006	30.91	0.0000	.009504
3.525	12.833	14980.	1.0005	1.0001	1.0005	30.90	0.0000	.009504
3.614	13.119	15315.	.9991	.9994	.9992	30.86	0.0000	.009504
3.649	13.226	15509.	1.0000	1.0000	1.0000	30.89	0.0000	.009504
3.683	13.404	15649.	.9995	.9999	.9997	30.84	0.0000	.009504

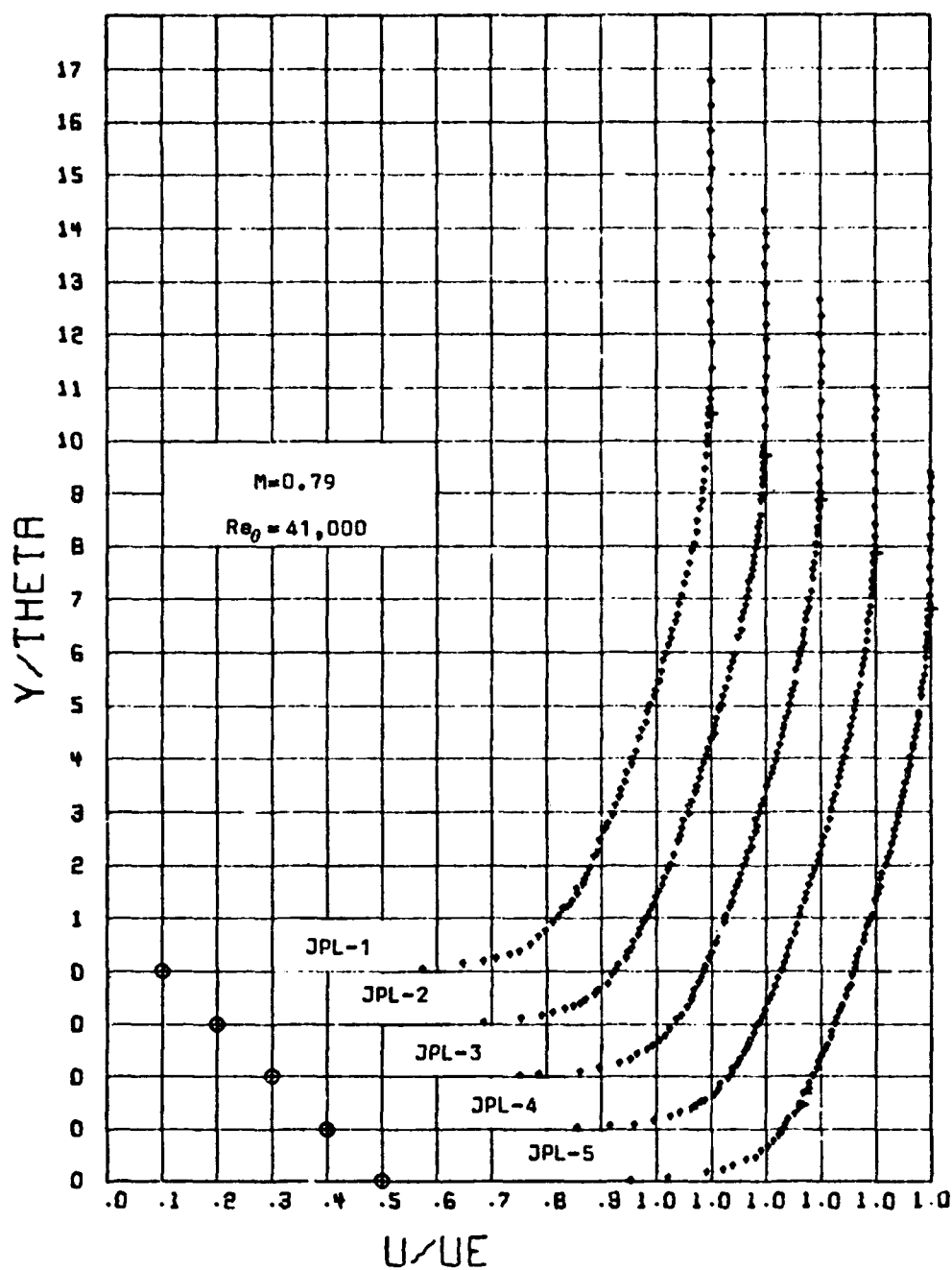


Figure A17. Mean Velocity Profiles.

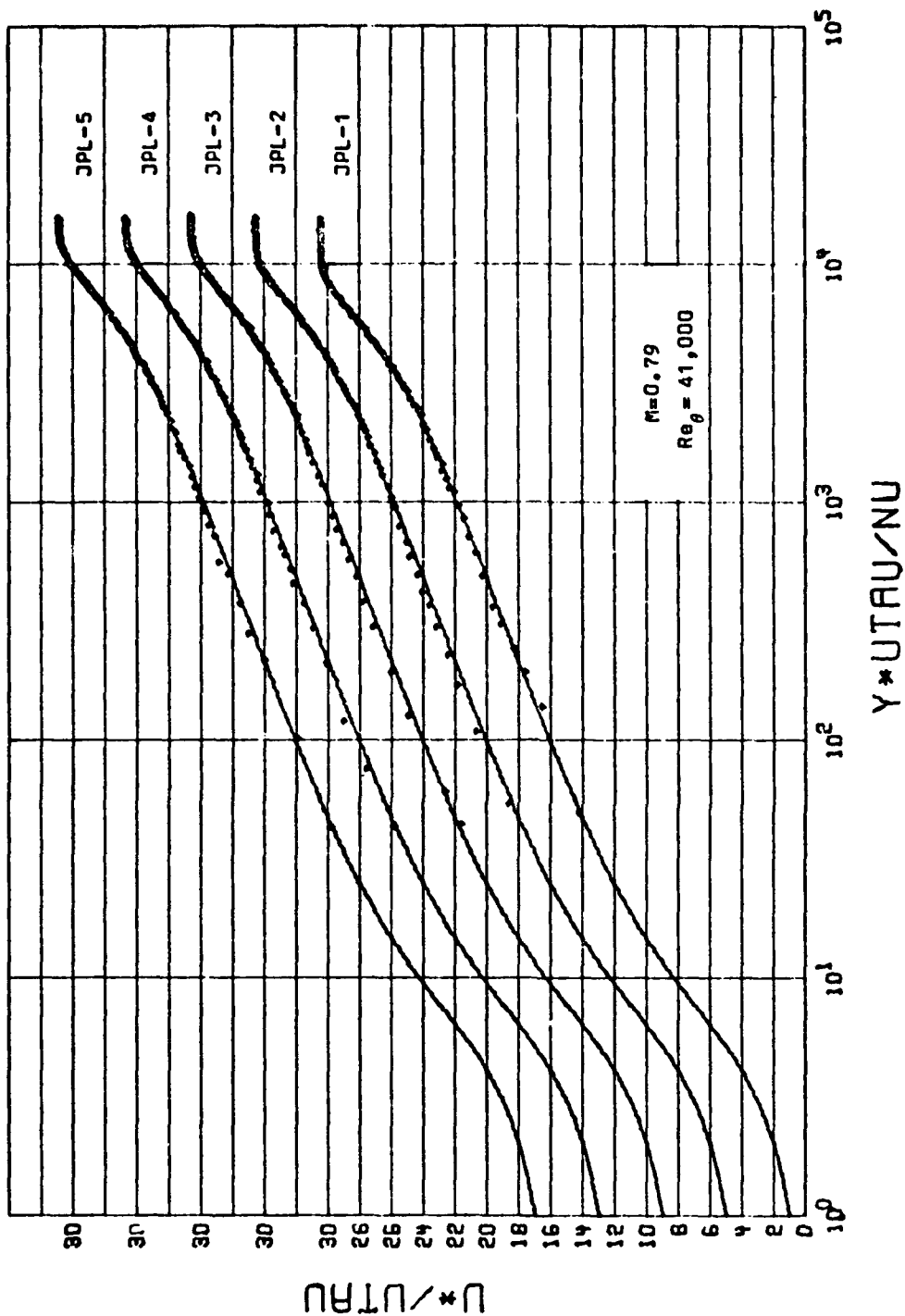


Figure A 18. Van Driest Scaled Mean Velocity Profiles.

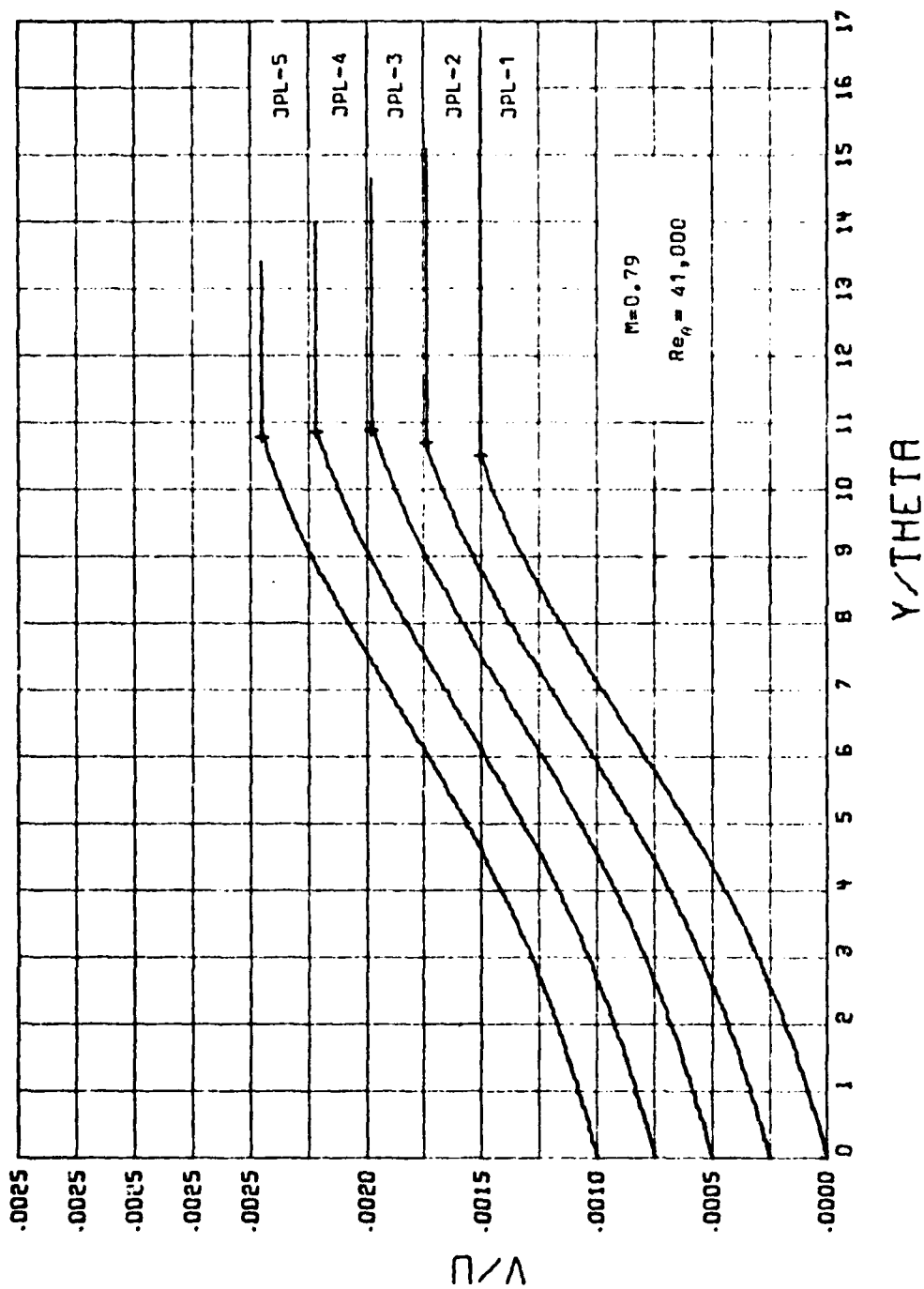


Figure A19. Normal Velocity Distribution.

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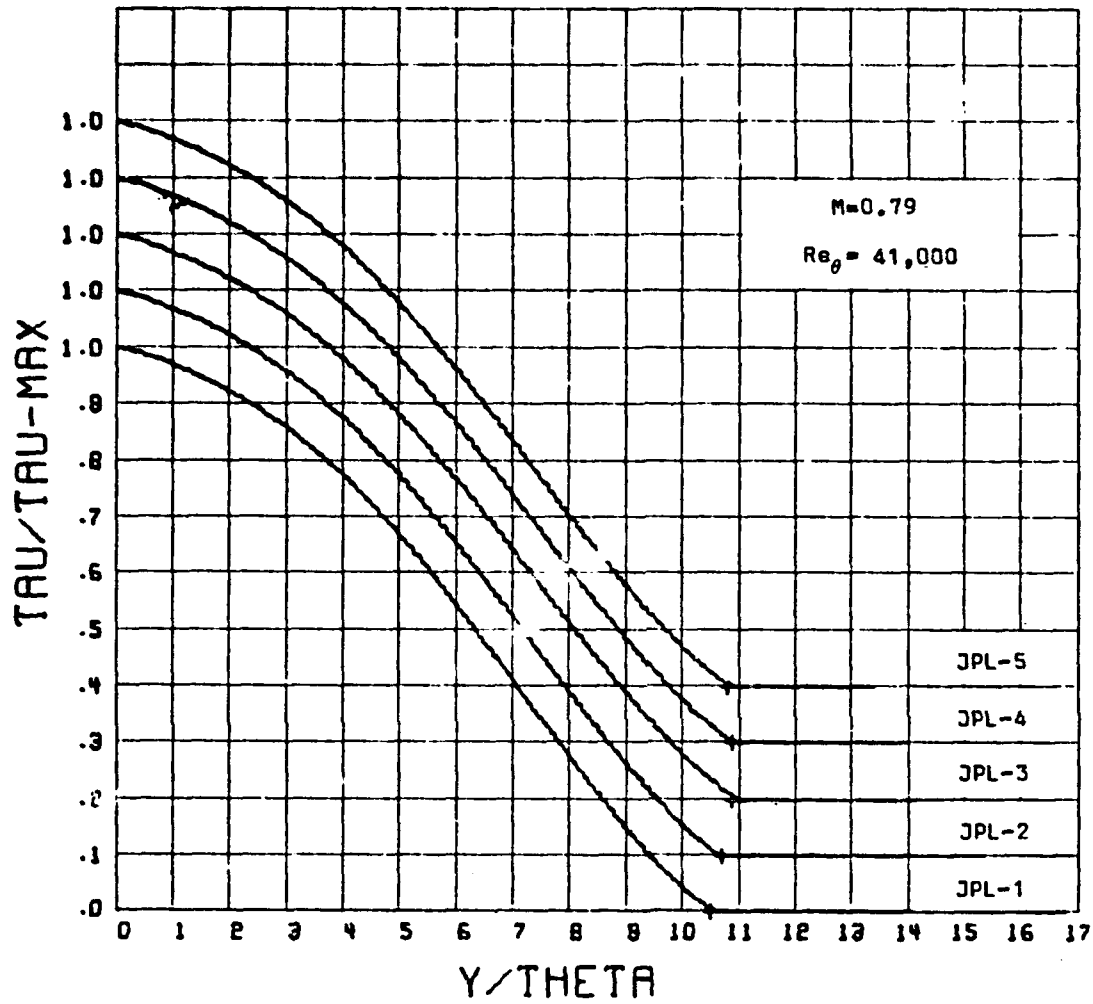


Figure A20. Shear Stress Distribution.

TABLE A 9. DATA SUMMARY
PROFILE - JPL-1 - - - PITOT PRESSURE DATA

EDGE MACH NO.= .9664		TOTAL PRESSURE=.6611E+05 N/MO. 2		TOTAL TEMPERATURE= 310.59 DEG-K		M= 1.677		
X=-48.43 CM		DELTA STAR= .3487 CM		THETA=.2079 CM		DELTA= 2.1042 CM		
UF= 313.76 M/SEC		RE-THETA= 18650.		MUALL= .4546 CM/OZ/SEC				
KF-DELTA-STAR= 31290.		CF= .002108		PI= .7057				
LEAST SQUARE FIT PARAMETERS		YMAX= 1.991 CM		YMIN= .081 CM				
UTAU= 10.9979 M/SEC								
CHISOR= .2873E-05								
Y (CM)	Y/THETA	Y-PLUS	M/ME	RM/RHME	U/UE	I-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	3.	0.0000	.8581	0.0000	0.00	1.0000	0.000000
.010	.048	24.	.3807	.8787	.4041	11.63	1.0000	0.000000
.010	.091	45.	.4635	.8884	.4917	14.11	.9992	0.000304
.045	.210	110.	.5480	.9007	.5774	16.60	.9966	0.000104
.047	.299	149.	.5696	.9041	.5980	17.23	.9946	0.000323
.081	.390	195.	.5903	.9075	.6197	17.84	.9922	0.000337
.092	.445	223.	.6072	.9104	.6344	18.33	.9904	0.000337
.118	.547	284.	.6248	.9135	.6537	18.84	.9869	0.000349
.143	.650	345.	.6433	.9148	.6718	19.37	.9829	0.000341
.161	.775	389.	.6527	.9185	.6810	19.84	.9789	0.000370
.195	.940	471.	.6587	.9214	.6946	20.10	.9739	0.000384
.227	1.093	547.	.6639	.9244	.7112	20.54	.9680	0.0003102
.269	1.294	648.	.6685	.9273	.7254	20.96	.9595	0.000124
.293	1.410	706.	.7047	.9285	.7312	21.13	.9543	0.000137
.327	1.575	789.	.7151	.9306	.7413	21.43	.9466	0.000156
.346	1.714	850.	.7265	.9330	.7521	21.75	.9396	0.000172
.348	1.848	914.	.7346	.9347	.7598	21.98	.9314	0.000191
.414	2.002	1003.	.7390	.9354	.7660	22.11	.9242	0.000204
.455	2.192	1094.	.7516	.9382	.7749	22.46	.9132	0.000237
.481	2.314	1159.	.7547	.9393	.7807	22.40	.9057	0.000249
.521	2.509	1257.	.7617	.9408	.7873	22.80	.8930	0.000274
.547	2.641	1343.	.7648	.9433	.7917	23.11	.8813	0.000301
.549	2.833	1419.	.7805	.9445	.8031	23.27	.8702	0.000324
.623	2.998	1503.	.7871	.9460	.8082	23.44	.8577	0.000350
.655	3.151	1579.	.7952	.9474	.8148	23.48	.8455	0.000375
.697	3.352	1680.	.8013	.9492	.8224	23.85	.8284	0.000438
.732	3.523	1745.	.8151	.9523	.8352	24.24	.8136	0.000438
.741	3.755	1881.	.8233	.9543	.8424	24.56	.7920	0.000479
.811	3.902	1954.	.8275	.9552	.8447	24.58	.7776	0.000507
.844	4.041	2035.	.8345	.9569	.8531	24.77	.7616	0.000537
.847	4.269	2139.	.8429	.9589	.8608	25.01	.7397	0.000577
.903	4.537	2273.	.8539	.9615	.8708	25.31	.7008	0.000631
.901	4.749	2360.	.8609	.9632	.8771	25.50	.6878	0.000679
1.043	4.920	2515.	.8713	.9667	.8871	25.69	.6523	0.000733
1.098	5.282	2647.	.8828	.9687	.8970	26.10	.6190	0.000790
1.147	5.417	2812.	.8925	.9711	.9046	26.35	.6755	0.000843
1.207	5.817	2910.	.9002	.9731	.9126	26.57	.6489	0.000908
1.214	6.040	3026.	.9089	.9753	.9204	26.81	.6166	0.000940
1.318	6.339	3170.	.9194	.9781	.9300	27.10	.6742	0.001029
1.343	6.450	3332.	.9248	.9800	.9362	27.29	.6293	0.001107
1.446	6.907	3461.	.9352	.9822	.9436	27.52	.5920	0.001154

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TABLE 4. 9. (CONT.)

V (CM)	V/THETA	V-PLUS	M/ME	RHO/RME	U/ME	U-PLUS	TAU/TAU-MAX	V/U
1.445	7.145	3580.	.9432	.9843	.9507	27.75	.3573	.001212
1.517	7.395	3705.	.9511	.9844	.9576	27.95	.3211	.001267
1.543	7.615	3816.	.9576	.9842	.9633	28.12	.2896	.001315
1.64.	7.909	3963.	.9606	.9890	.9659	28.20	.2443	.001377
1.688	8.123	4070.	.9699	.9916	.9740	28.45	.2189	.001420
1.739	8.367	4192.	.9736	.9926	.9773	28.55	.1946	.001468
1.799	8.553	4336.	.9797	.994.	.9825	28.71	.1.98	.001541
1.842	8.861	4447.	.9833	.9953	.9856	28.81	.1246	.001557
1.899	9.136	4578.	.9867	.9962	.9884	28.90	.0933	.001602
1.945	9.354	4688.	.9901	.9972	.9915	28.98	.0700	.001636
1.991	9.574	4798.	.9928	.9979	.9934	29.06	.0484	.001668
2.043	9.824	4924.	.9929	.9980	.9939	29.06	.0742	.001698
2.091	10.058	5040.	.9962	.9989	.9947	29.15	.0091	.001723
2.133	10.240	5141.	.9955	.9987	.9942	29.13	0.0000	.001734
2.194	10.543	5288.	.9975	.9993	.9979	29.18	0.0000	.001734
2.274	10.840	5431.	.9973	.9992	.9977	29.18	0.0000	.001734
2.340	11.353	5689.	.9987	.9994	.9989	29.21	0.0000	.001734
2.471	11.885	5955.	.9991	.9997	.9992	29.22	0.0000	.001734
2.553	12.281	6154.	.9992	.9994	.9994	29.23	0.0000	.001734
2.640	12.497	6342.	1.0007	1.0002	1.0004	29.27	0.0000	.001734
2.778	12.860	6454.	.9998	.9999	.9998	29.24	0.0000	.001734
2.772	13.332	6480.	1.0001	1.0000	1.0001	29.25	0.0000	.001734
2.868	13.794	6913.	.9997	.9999	.9998	29.24	0.0000	.001734
2.955	14.309	7170.	.9987	.9995	.9985	29.20	0.0000	.001734
3.074	14.785	7408.	.9993	.9994	.9994	29.23	0.0000	.001734
3.122	15.018	7525.	1.0016	1.0004	1.0014	29.24	0.0000	.001734
3.146	15.224	7629.	.9994	.9998	.9995	29.23	0.0000	.001734
3.221	15.494	7763.	1.0004	1.0001	1.0004	29.26	0.0000	.001734
3.243	15.695	7865.	.9995	.9994	.9994	29.23	0.0000	.001734
3.375	15.897	7966.	.9989	.9997	.9991	29.22	0.0000	.001734
3.354	16.142	8088.	.9985	.9995	.9987	29.21	0.0000	.001734
3.398	16.343	8189.	1.0008	1.0002	1.0007	29.27	0.0000	.001734
3.458	16.810	8333.	1.0001	1.0000	1.0001	29.25	0.0000	.001734

TABLE A 9. (CONT.)
PROFILE - JPL-2 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .9669 TOTAL PRESSURE = .6691E-05 N/MOO2
 X = 26.21 CM TOTAL TEMPERATURE = 312.05 DEG-K

Y (CM)	Y/THETA	Y-PLUS	M/ME	RMO/RHDE	U/UF	U-PLUS	TAU/TAU-MAX	V/VI
0.000	0.000	0.	0.0000	.8580	0.0000	0.00	1.0000	0.000000
.010	.043	24.	.3734	.8778	.3986	11.53	1.0000	0.000000
.011	.047	27.	.3881	.8795	.4149	12.00	.9999	0.000000
.013	.054	33.	.4342	.8847	.4616	13.37	.9997	0.000001
.024	.101	57.	.4788	.8905	.5074	14.71	.9999	0.000005
.043	.181	103.	.5340	.8945	.5633	16.36	.9973	0.000013
.058	.264	140.	.5817	.9028	.6312	17.18	.9958	.000019
.074	.319	172.	.5847	.9044	.6156	17.90	.9939	.000025
.087	.410	234.	.6033	.9096	.6325	18.40	.9813	.000034
.111	.669	268.	.6128	.9133	.6470	18.68	.9896	.000039
.124	.821	298.	.6160	.9134	.6549	19.07	.9880	.000044
.142	.994	341.	.6333	.9149	.6631	19.28	.9856	.000051
.172	.174	414.	.6514	.9182	.6788	19.51	.9813	.000064
.199	.284	478.	.6605	.9199	.6887	20.07	.9773	.000074
.223	.437	536.	.6741	.9225	.7018	20.47	.9736	.000085
.241	.644	603.	.6842	.9244	.7124	20.79	.9690	.000096
.287	1.203	689.	.6961	.9268	.7231	21.10	.9629	.000112
.284	1.192	683.	.6951	.9266	.7221	21.07	.9628	.000112
.308	1.293	741.	.6985	.9272	.7253	21.17	.9590	.000121
.330	1.384	792.	.7068	.9285	.7314	21.35	.9549	.000131
.360	1.517	844.	.7143	.9304	.7405	21.52	.9460	.000145
.393	1.650	945.	.7201	.9314	.7460	21.79	.9423	.000151
.424	1.778	1018.	.7309	.9339	.7563	22.10	.9358	.000174
.452	1.938	1110.	.7396	.9356	.7646	22.35	.9272	.000185
.490	2.054	1177.	.7443	.9371	.7709	22.54	.9206	.000210
.516	2.167	1241.	.7536	.9386	.7774	22.74	.9141	.000224
.556	2.332	1336.	.7568	.9393	.7809	23.06	.9039	.000244
.589	2.444	1399.	.7647	.9410	.7863	23.25	.8968	.000261
.629	2.513	1439.	.7711	.9424	.7963	23.31	.8922	.000270
.679	2.635	1503.	.7735	.9429	.7966	23.31	.8846	.000274
.681	2.774	1508.	.7837	.9452	.8061	23.40	.8741	.000308
.683	2.864	1640.	.7821	.9464	.8061	23.56	.8674	.000321
.724	3.056	1750.	.7938	.9475	.8155	23.89	.8577	.000350
.748	3.134	1794.	.7967	.9481	.8192	24.47	.8464	.000363
.770	3.269	1872.	.8018	.9493	.8230	24.11	.8354	.000374
.828	3.471	1998.	.8127	.9518	.8300	24.42	.8180	.000418
.864	3.647	2044.	.8214	.9538	.8411	24.66	.8074	.000447
.905	3.794	2174.	.8251	.9544	.8445	24.77	.7881	.000474
.949	3.984	2281.	.8406	.9559	.8495	24.92	.7697	.000504
.949	4.144	2376.	.8370	.9575	.8564	25.10	.7529	.000539
1.074	4.345	2688.	.8487	.9602	.8641	25.42	.7319	.000576

UE = 314.03 M/SEC DELTA STAR = .3983 CM TMETA = .2385 CM M = 1.070
 RE-THETA = 20890. MUALL = .4546 CM/SEC

LEAST SQUARE FIT PARAMETERS CP = .002065 DELTA = 2.4307 CM
 UTATIO IN.9180 M/SEC VTIME = .07 CM
 CHISQ = .4746E-05

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TABLE A 9. (CONT.)

Y (CM)	Y/THETA	Y-PLUS	M/ME	Q. RMO/RMFE	U/U*	U-PLUS	TAU/TAU-MAX	V/U
1.049	4.568	2416.	.8544	.9421	.8731	25.64	.7070	.000620
1.176	4.723	2705.	.8590	.9628	.8755	25.71	.6892	.000651
1.173	4.920	2818.	.8678	.9640	.8834	25.95	.6857	.000692
1.200	5.069	2903.	.8751	.9667	.8901	26.16	.6744	.000723
1.252	5.250	3007.	.8803	.9680	.8967	26.30	.6747	.000761
1.297	5.442	3116.	.8871	.9697	.9008	26.48	.5999	.000802
1.336	5.601	3208.	.8929	.9712	.9060	26.64	.5787	.000837
1.367	5.734	3284.	.9008	.9732	.9131	26.86	.5609	.000868
1.474	5.809	3373.	.9034	.9739	.9156	26.93	.5399	.000900
1.470	5.995	3454.	.9061	.9745	.9178	27.01	.5252	.000924
1.465	6.164	3519.	.9132	.9764	.9241	27.20	.5044	.000957
1.494	6.267	3549.	.9165	.9772	.9271	27.29	.4871	.000984
1.510	6.414	3676.	.9203	.9787	.9304	27.39	.4659	.001017
1.573	6.624	3793.	.9290	.9805	.9382	27.63	.4361	.001063
1.633	6.847	3922.	.9348	.9821	.9433	27.79	.4038	.001113
1.685	7.064	4047.	.9414	.9838	.9491	27.97	.3722	.001161
1.744	7.316	4190.	.9450	.9848	.9522	28.07	.3360	.001216
1.774	7.502	4297.	.9445	.9874	.9506	28.33	.3092	.001255
1.849	7.743	4440.	.9576	.9882	.9633	28.41	.2732	.001308
1.892	7.936	4544.	.9621	.9854	.9672	28.53	.2484	.001345
1.944	8.148	4678.	.9708	.9919	.9748	28.76	.2163	.001391
2.010	8.386	4803.	.9709	.9918	.9768	28.76	.1872	.001433
2.041	8.462	4949.	.9761	.9938	.9810	28.96	.1545	.001480
2.115	8.871	5081.	.9821	.9949	.9864	29.07	.1264	.001520
2.264	9.086	5202.	.9834	.9954	.9859	29.11	.1017	.001554
2.212	9.276	5312.	.9882	.9964	.9898	29.23	.0806	.001584
2.258	9.447	5422.	.9898	.9971	.9913	29.28	.0607	.001612
2.311	9.691	5550.	.9898	.9971	.9912	29.27	.0353	.001642
2.359	9.888	5643.	.9943	.9983	.9951	29.39	.0220	.001665
2.402	10.074	5770.	.9936	.9981	.9963	29.37	.0072	.001686
2.448	10.244	5880.	.9944	.9994	.9983	29.40	0.0000	.001686
2.443	10.442	5984.	.9965	.9990	.9970	29.45	0.0000	.001594
2.539	10.852	6215.	.9978	.9993	.9991	29.49	0.0000	.001694
2.560	11.193	6410.	.9984	.9996	.9989	29.51	0.0000	.001594
2.700	11.571	6627.	1.0003	1.0000	1.0002	29.55	0.0000	.001694
2.844	11.927	6831.	.9980	.9994	.9983	29.59	0.0000	.001694
2.931	12.249	7038.	.9985	.9996	.9987	29.51	0.0000	.001694
3.011	12.625	7231.	.9986	.9994	.9984	29.51	0.0000	.001694
3.043	12.979	7404.	.9986	.9994	.9984	29.51	0.0000	.001694
3.154	13.227	7575.	.9986	.9994	.9984	29.51	0.0000	.001694
3.219	13.593	7780.	1.0011	1.0000	1.0000	29.55	0.0000	.001694
3.309	13.874	7947.	.9993	.9998	.9994	29.53	0.0000	.001694
3.350	14.047	8045.	1.0001	1.0000	1.0000	29.55	0.0000	.001694
3.389	14.212	8139.	.9999	.9999	.9999	29.54	0.0000	.001594
3.427	14.372	8231.	1.0001	1.0000	1.0000	29.55	0.0000	.001694
3.455	14.489	8298.	.9997	.9999	.9997	29.54	0.0000	.001594
3.548	14.877	8521.	1.0001	1.0000	1.0000	29.55	0.0000	.001694

TABLE A 9. (CONT.)
PROFILE - JPL-3 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .9719		TOTAL PRESSURE = .6638E+05 N/M ²		TOTAL TEMPERATURE = 300.36 DEG-K		M = 1.656		
X = -7.62 CM		DELTA STAR = .4084 CM		THETA = .2466 CM		MUHALL = .4531 CM ² /SEC		
RE-DELTA-STAR = 37630.		RE-THETA = 22720.				DELTA = 2.6090 CM		
LEAST SQUARE FIT PARAMETERS				PI = .4076				
UTAU = 11.0079 M/SEC		CF = .002097		YMIN = .077 CM				
CHISQ = .7695E-05		VMAX = 2.454 CM						
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHME	U/UF	I-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.8567	0.0000	0.0%	1.0000	0.000000
.010	.041	24.	.4100	.8808	.4369	12.74	1.0000	0.000000
.012	.051	30.	.4158	.8815	.4429	12.72	.9959	.000001
.016	.066	40.	.4736	.8888	.5023	14.46	.9995	.000002
.027	.113	67.	.5165	.8949	.5460	15.72	.9986	.000007
.038	.154	92.	.5444	.8992	.5741	16.54	.9978	.000011
.053	.216	129.	.5602	.9017	.5900	17.00	.9963	.000016
.063	.257	154.	.5752	.9041	.6049	17.44	.9953	.000020
.077	.314	188.	.5930	.9071	.6227	17.96	.9937	.000026
.089	.360	215.	.6078	.9096	.6373	18.39	.9924	.000030
.104	.422	253.	.6170	.9112	.6463	18.66	.9906	.000034
.125	.499	305.	.6283	.9133	.6574	18.99	.9879	.000044
.144	.587	351.	.6443	.9162	.6732	19.45	.9854	.000052
.166	.674	404.	.6561	.9184	.6846	19.79	.9824	.000060
.186	.757	453.	.6647	.9200	.6930	20.04	.9795	.000068
.207	.839	502.	.6742	.9218	.7022	20.31	.9765	.000077
.220	.906	536.	.6818	.9233	.7095	20.53	.9743	.000082
.245	.993	595.	.6855	.9260	.7131	20.64	.9705	.000092
.257	1.045	626.	.6899	.9269	.7174	20.76	.9685	.000098
.293	1.189	712.	.7012	.9271	.7282	21.09	.9625	.000113
.327	1.328	766.	.714	.9299	.7411	21.47	.9564	.000127
.360	1.462	876.	.7221	.9314	.7482	21.68	.9503	.000142
.388	1.575	944.	.7295	.9329	.7553	21.89	.9449	.000155
.417	1.684	1015.	.7354	.9342	.7608	22.06	.9391	.000168
.449	1.823	1092.	.7469	.9368	.7639	22.15	.9324	.000183
.476	1.931	1157.	.7647	.9361	.7696	22.32	.9267	.000196
.501	2.034	1218.	.7541	.9382	.7706	22.59	.9210	.000209
.539	2.188	1311.	.7577	.9389	.7819	22.69	.9122	.000224
.577	2.343	1403.	.7637	.9403	.7876	22.86	.9079	.000248
.610	2.477	1484.	.7763	.9430	.7894	23.21	.8945	.000265
.650	2.636	1579.	.7802	.9439	.8031	23.32	.8841	.000287
.679	2.755	1650.	.7856	.9451	.8081	23.47	.8740	.000303
.718	2.914	1744.	.7898	.9461	.8120	23.59	.8648	.000326
.755	3.064	1835.	.7975	.9478	.8191	23.80	.8538	.000348
.783	3.177	1903.	.7992	.9482	.8207	23.85	.8451	.000365
.829	3.342	2014.	.8108	.9509	.8314	24.17	.8305	.000384
.867	3.517	2107.	.8169	.9523	.8371	24.34	.8177	.000419
.899	3.646	2184.	.8237	.9530	.8433	24.53	.8067	.000440
.941	3.816	2284.	.8285	.9551	.8478	24.67	.7916	.000468
.979	3.970	2378.	.8344	.9564	.8532	24.83	.7774	.000494
1.017	4.125	2471.	.8395	.9577	.8578	24.97	.7627	.000521

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TABLE A 9. (CONT.)

Y (CM)	Y/THETA	Y-PLUS	M/ME	RND/RHME	U/UE	U-PLUS	TAU/TAU-MAX	V/U
1.041	4.395	2579.	.8465	.9594	.8643	25.16	.7449	.000554
1.103	4.475	2481.	.8538	.9611	.8709	25.36	.7275	.000585
1.130	4.583	2486.	.8570	.9619	.8737	25.45	.7162	.000605
1.165	4.727	2432.	.8609	.9629	.8773	25.56	.7007	.000632
1.194	4.841	2312.	.8670	.9644	.8829	25.73	.6860	.000658
1.240	5.031	3014.	.8710	.9654	.8845	25.84	.6669	.000691
1.268	5.164	3082.	.8783	.9672	.8930	26.04	.6537	.000714
1.316	5.314	3184.	.8785	.9673	.8932	26.04	.6337	.000748
1.341	5.438	3248.	.8874	.9695	.9012	26.29	.6189	.000773
1.377	5.587	3347.	.8898	.9701	.9034	26.35	.6006	.000804
1.410	5.721	3427.	.8951	.9715	.9091	26.50	.5839	.000832
1.456	5.907	3538.	.9035	.9736	.9156	26.72	.5604	.000870
1.497	6.071	3637.	.9072	.9746	.9189	26.83	.5392	.000905
1.527	6.195	3711.	.9118	.9758	.9230	26.95	.5230	.000931
1.560	6.329	3791.	.9157	.9768	.9285	27.06	.5053	.000971
1.611	6.535	3915.	.9202	.9780	.9304	27.18	.4778	.001003
1.647	6.679	4001.	.9258	.9795	.9355	27.33	.4584	.001034
1.675	6.792	4069.	.9284	.9802	.9377	27.40	.4430	.001058
1.714	6.952	4165.	.9353	.9820	.9438	27.58	.4212	.001092
1.751	7.101	4254.	.9370	.9825	.9453	27.63	.4007	.001124
1.781	7.225	4328.	.9395	.9832	.9475	27.70	.3838	.001157
1.817	7.369	4415.	.9441	.9844	.9516	27.82	.3640	.001181
1.859	7.539	4517.	.9485	.9856	.9544	27.94	.3407	.001216
1.903	7.719	4625.	.9534	.9869	.9597	28.07	.3161	.001253
1.934	7.843	4699.	.9554	.9875	.9614	28.13	.2993	.001279
1.972	7.998	4791.	.9580	.9882	.9637	28.20	.2784	.001310
2.028	8.224	4977.	.9683	.9905	.9709	28.42	.2683	.001355
2.065	8.379	5019.	.9690	.9912	.9733	28.49	.2280	.001364
2.104	8.569	5121.	.9726	.9922	.9764	28.58	.2061	.001417
2.147	8.688	5205.	.9743	.9927	.9779	28.63	.1885	.001442
2.190	8.842	5297.	.9752	.9930	.9784	28.65	.1603	.001470
2.212	8.971	5374.	.9813	.9947	.9839	28.82	.1537	.001493
2.256	9.151	5482.	.9826	.9950	.9850	28.85	.1324	.001523
2.294	9.311	5578.	.9841	.9955	.9853	28.89	.1141	.001550
2.334	9.445	5671.	.9860	.9960	.9879	28.94	.0967	.001575
2.381	9.656	5785.	.9870	.9963	.9888	28.97	.0768	.001603
2.413	9.785	5862.	.9910	.9974	.9923	29.07	.0639	.001621
2.454	9.955	5964.	.9925	.9978	.9936	29.11	.0475	.001644
2.499	10.120	6069.	.9931	.9980	.9940	29.13	.0315	.001667
2.538	10.294	6167.	.9952	.9986	.9958	29.18	.0175	.001687
2.574	10.439	6254.	.9952	.9984	.9958	29.18	.0060	.001703
2.616	10.609	6355.	.9960	.9984	.9966	29.21	0.0000	.001711
2.645	10.809	6476.	.9965	.9990	.9970	29.22	0.0000	.001711
2.685	11.093	6645.	.9994	.9998	.9995	29.30	0.0000	.001711
2.735	11.438	6852.	.9989	.9996	.9990	29.28	0.0000	.001711
2.817	11.829	7087.	.9989	.9994	.9990	29.28	0.0000	.001711
3.011	12.210	7315.	.9996	.9998	.9997	29.30	0.0000	.001711
3.097	12.560	7525.	1.0009	1.0002	1.0008	29.34	0.0000	.001711
3.191	12.942	7753.	1.0014	1.0004	1.0012	29.35	0.0000	.001711
3.296	13.359	8003.	.9998	.9999	.9998	29.31	0.0000	.001711
3.312	13.755	8241.	.9990	.9997	.9991	29.28	0.0000	.001711
3.442	13.961	8364.	1.0006	1.0001	1.0005	29.33	0.0000	.001711
3.494	14.188	8500.	1.0011	1.0003	1.0019	29.34	0.0000	.001711
3.552	14.404	8627.	.9980	.9997	.9991	29.28	0.0000	.001711
3.549	14.554	8719.	1.0001	1.0000	1.0001	29.31	0.0000	.001711
3.641	14.765	8845.	.9997	.9999	.9998	29.30	0.0000	.001711

TABLE A 9. (CONT.)
PROFILE - JPL-4 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .9672 TOTAL PRESSURE = .6605E+05 N/M²
X = 0.00 CM TOTAL TEMPERATURE = 312.77 DEG-K

LEAST SQUARE FIT PARAMETERS									
UE = 315.09 M/SEC		DELTA STAR = .4228 CM		THETA = .2556 CM		M = 1.653			
RE-DELTA-STAR = 37790.		RE-THETA = 22840.		MINALL = .4571 CM=2/SEC		CF = .002057			
UTAU = 10.9744 M/SEC		CF = .002081		PI = .6222		DELTA = 2.6964 CM			
CHISQR = .6317E-05		YMAX = 2.538 CM		YMIN = .074 CM					
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.8579	0.0000	0.00	1.0000	0.000000	
.010	.039	24.	.4037	.8810	.4300	12.40	1.0000	0.000300	
.021	.044	27.	.4269	.8838	.4541	13.10	.9949	0.000000	
.036	.104	64.	.5148	.8955	.5440	15.73	.9988	.000004	
.052	.203	125.	.5643	.9031	.5938	17.19	.9867	.000015	
.074	.293	179.	.5847	.9065	.6142	17.79	.9944	.000723	
.092	.362	222.	.6092	.9104	.6383	18.51	.9925	.000030	
.118	.442	283.	.6266	.9137	.6555	19.01	.9896	.000039	
.140	.551	338.	.6365	.9155	.6653	19.30	.9868	.000047	
.158	.620	381.	.6396	.9160	.6682	19.39	.9845	.000054	
.170	.665	408.	.6526	.9184	.6810	19.77	.9830	.000059	
.207	.809	497.	.6588	.9214	.6948	20.24	.9780	.000072	
.224	.879	539.	.6748	.9226	.7026	20.41	.9754	.000079	
.240	.938	576.	.6801	.9234	.7076	20.56	.9731	.000085	
.260	1.018	625.	.6887	.9253	.7159	20.81	.9701	.000093	
.283	1.107	679.	.6921	.9259	.7192	20.91	.9665	.000102	
.293	1.167	704.	.7011	.9277	.7279	21.17	.9648	.000104	
.341	1.336	820.	.7100	.9295	.7344	21.62	.9568	.000125	
.370	1.450	890.	.7165	.9308	.7426	21.81	.9516	.000138	
.406	1.549	975.	.7286	.9333	.7462	21.95	.9451	.000153	
.443	1.733	1064.	.7398	.9354	.7468	22.27	.9380	.000169	
.485	1.897	1164.	.7453	.9368	.7700	22.43	.9295	.000184	
.519	2.031	1247.	.7540	.9389	.7791	22.70	.923	.000204	
.561	2.195	1347.	.7585	.9396	.7825	22.80	.9130	.000224	
.590	2.310	1417.	.7632	.9407	.7869	22.94	.9062	.000234	
.624	2.444	1500.	.7725	.9427	.7937	23.20	.8980	.000254	
.654	2.548	1570.	.7774	.9437	.8000	23.33	.8907	.000271	
.678	2.692	1652.	.7848	.9454	.8071	23.56	.8818	.000289	
.727	2.844	1747.	.7901	.9466	.8121	23.69	.8712	.000310	
.744	2.990	1835.	.7921	.9470	.8139	23.75	.8609	.000331	
.802	3.139	1927.	.7987	.9485	.8201	23.93	.8498	.000353	
.833	3.258	2000.	.8052	.9500	.8261	24.12	.8406	.000371	
.877	3.432	2106.	.8136	.9519	.8338	24.35	.8266	.000398	
.915	3.581	2198.	.8178	.9529	.8378	24.47	.8141	.000421	
.948	3.845	2372.	.8262	.9549	.8455	24.70	.8021	.000444	
1.023	4.004	2457.	.8314	.9561	.8502	24.85	.7897	.000468	
1.061	4.153	2549.	.8408	.9574	.8526	24.92	.7763	.000492	
1.094	4.287	2631.	.8459	.9583	.8549	25.11	.7621	.000518	
1.134	4.436	2722.	.8531	.9595	.8615	25.25	.7489	.000541	
1.164	4.555	2796.	.8570	.9622	.8737	25.45	.7338	.000568	
						25.56	.7214	.000590	

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TABLE A 9. (CONT.)

Y (CM)	Y/THETA	Y-PLUS	N/MF	RHO/RHOE	U/U	U-PLUS	TAU/TAU-MAX	V/U
1.200	4.494	2881.	.8610	.9632	.8772	25.87	.7066	.000616
1.240	4.853	2979.	.8653	.9643	.8812	25.73	.6893	.000646
1.266	4.953	3039.	.8706	.9656	.8860	25.93	.6782	.000665
1.299	5.082	3119.	.8758	.9669	.8907	26.03	.6635	.000691
1.347	5.270	3235.	.8817	.9683	.8940	26.24	.6414	.000728
1.325	5.429	3326.	.8866	.9696	.8974	26.37	.6236	.000754
1.423	5.560	3418.	.8909	.9704	.9033	26.45	.6054	.000784
1.424	5.688	3491.	.8943	.9714	.9073	26.58	.5907	.000812
1.453	5.842	3585.	.8989	.9732	.9132	26.76	.5713	.000844
1.522	5.956	3655.	.9024	.9734	.9166	26.81	.5568	.000864
1.545	6.045	3710.	.9047	.9742	.9186	26.87	.5452	.000884
1.581	6.185	3766.	.9112	.9758	.9224	27.04	.5271	.000915
1.619	6.334	3827.	.9132	.9764	.9241	27.10	.5075	.000947
1.656	6.473	3873.	.9176	.9775	.9279	27.22	.4890	.000976
1.685	6.632	4070.	.9226	.9784	.9325	27.35	.4676	.001009
1.745	6.839	4192.	.9280	.9802	.9373	27.50	.4404	.001051
1.776	6.950	4265.	.9331	.9816	.9418	27.66	.4245	.001076
1.853	7.273	4463.	.9412	.9837	.9489	27.86	.3803	.001144
1.971	7.436	4564.	.9458	.9850	.9530	27.98	.3580	.001178
1.925	7.531	4622.	.9520	.9867	.9584	28.15	.3450	.001197
1.940	7.670	4707.	.9526	.9868	.9590	28.17	.3262	.001224
2.007	7.856	4820.	.9580	.9883	.9636	28.31	.3023	.001253
2.034	7.973	4893.	.9603	.9889	.9646	28.37	.2853	.001284
2.059	8.077	4957.	.9630	.9897	.9680	28.45	.2714	.001307
2.099	8.211	5040.	.9636	.9898	.9686	28.46	.2533	.001333
2.132	8.341	5119.	.9693	.9914	.9735	28.61	.2368	.001357
2.157	8.440	5180.	.9697	.9915	.9739	28.63	.2240	.001374
2.194	8.553	5252.	.9733	.9925	.9769	28.72	.2084	.001396
2.218	8.678	5324.	.9756	.9931	.9788	28.78	.1938	.001420
2.241	8.804	5404.	.9780	.9934	.9810	28.85	.1779	.001443
2.287	8.947	5491.	.9786	.9942	.9826	28.89	.1611	.001467
2.317	9.084	5564.	.9803	.9944	.9831	28.91	.1470	.001487
2.358	9.235	5662.	.9831	.9952	.9854	28.94	.1284	.001513
2.397	9.379	5756.	.9852	.9950	.9873	29.04	.1113	.001534
2.432	9.513	5839.	.9864	.9951	.9883	29.07	.0972	.001554
2.475	9.642	5922.	.9880	.9949	.9905	29.14	.0798	.001562
2.513	9.831	6036.	.9907	.9970	.9911	29.16	.0652	.001593
2.538	9.930	6104.	.9914	.9974	.9926	29.21	.0554	.001616
2.574	10.069	6180.	.9931	.9980	.9941	29.25	.0432	.001653
2.623	10.263	6299.	.9937	.9982	.9946	29.27	.0268	.001656
2.659	10.402	6346.	.9952	.9984	.9959	29.31	.0159	.001671
2.691	10.527	6441.	.9967	.9989	.9967	29.33	.0088	.001684
2.733	10.600	6541.	.9966	.9990	.9971	29.36	0.0000	.001693
2.769	10.835	6650.	.9969	.9994	.9974	29.38	0.0000	.001693
2.800	11.073	6704.	.9987	.9994	.9988	29.40	0.0000	.001693
2.893	11.381	6945.	.9990	.9997	.9992	29.41	0.0000	.001693
2.914	11.689	7174.	1.0000	1.0000	1.0000	29.43	0.0000	.001693
3.004	11.967	7333.	1.0002	1.0002	1.0001	29.44	0.0000	.001693
3.133	12.256	7527.	.9991	.9997	.9992	29.45	0.0000	.001693
3.273	12.530	7696.	.9994	.9999	.9997	29.47	0.0000	.001693
3.294	12.846	7909.	1.0000	1.0000	1.0000	29.43	0.0000	.001693
3.300	13.224	8114.	1.0004	1.0001	1.0003	29.46	0.0000	.001693
3.466	13.482	8274.	.9994	.9999	.9997	29.42	0.0000	.001693
3.556	13.794	8447.	.9998	.9999	.9998	29.43	0.0000	.001693
3.553	14.019	8604.	1.0000	1.0000	1.0000	29.43	0.0000	.001693
3.674	14.312	8821.	.9996	.9999	.9997	29.42	0.0000	.001693

TABLE A 9. (CONT.)

PROFILE - JPL-5 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .9651
X = 7.62 CM
TOTAL PRESSURE = .6665E+05 N/m²
TOTAL TEMPERATURE = 312.05 DEG-K

UE= 314.15 M/SEC RE-DELTA-STAR= 30440.		DELTA STAR= .4407 CM RE-THETA= 23850.		THETA= .2645 CM MINALL= .4549 CM=2/SEC		M= 1.653		
LEAST SQUARE FIT PARAMETERS								
UTIME= 10.9025 M/SEC CHISQ= .7261E-05		CF= .002047 YMAX= 2.663 CM		PI= .6722 YMIN= .074 CM		DELTA= 2.8165 CM		
Y (")	V/THETA	V-PLUS	M/ME	RMT/RMGE	U/UF	I-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.8584	0.0000	0.00	1.0000	0.000000
.010	.038	24.	.3929	.8803	.4188	12.11	1.0000	0.000000
.020	.072	27.	.4000	.8871	.4354	12.60	.9999	0.000000
.030	.100	63.	.5002	.8939	.4290	13.34	.9999	0.000000
.040	.123	79.	.5259	.8974	.4551	14.11	.9994	0.000000
.050	.145	127.	.5526	.9014	.4820	14.90	.9967	0.000015
.060	.165	114.	.5522	.9014	.5415	14.89	.9967	0.000015
.070	.181	179.	.5820	.9064	.6113	17.77	.9947	0.000022
.080	.195	252.	.6129	.9114	.6419	18.48	.9915	0.000032
.090	.205	294.	.6256	.9138	.6542	19.04	.9896	0.000034
.100	.218	337.	.6352	.9155	.6638	19.33	.9875	0.000045
.110	.234	374.	.6458	.9174	.6742	19.64	.9857	0.000050
.120	.245	447.	.6627	.9204	.6907	20.13	.9814	0.000061
.130	.258	496.	.6663	.9213	.6942	20.21	.9791	0.000064
.140	.274	572.	.6770	.9233	.7045	20.54	.9748	0.000070
.150	.285	611.	.6884	.9257	.7145	20.90	.9724	0.000074
.160	.295	636.	.6980	.9254	.7152	20.86	.9709	0.000079
.170	.304	700.	.6920	.9267	.7191	20.94	.9670	0.000089
.180	.311	794.	.7044	.9284	.7309	21.33	.9608	0.000114
.190	.327	879.	.7174	.9313	.7434	21.71	.9550	0.000124
.200	.342	940.	.7204	.9319	.7443	21.79	.9507	0.000134
.210	.356	1019.	.7292	.9337	.7547	22.05	.9460	0.000152
.220	.374	1117.	.7317	.9342	.7570	22.12	.9374	0.000164
.230	.384	1174.	.7411	.9367	.7659	22.38	.9320	0.000181
.240	.394	1244.	.7509	.9382	.7752	22.66	.9270	0.000197
.250	.403	1311.	.7534	.9388	.7778	22.74	.9212	0.000204
.260	.411	1391.	.7622	.9407	.7849	22.99	.9142	0.000210
.270	.420	1484.	.7670	.9417	.7904	23.12	.9052	0.000234
.280	.428	1531.	.7693	.9422	.7924	23.19	.9012	0.000247
.290	.434	1604.	.7773	.9430	.8070	23.41	.8960	0.000261
.300	.440	1695.	.7824	.9451	.8084	23.56	.8848	0.000260
.310	.445	1794.	.7844	.9460	.8086	23.67	.8734	0.000302
.320	.450	1899.	.7927	.9474	.8144	23.85	.8624	0.000324
.330	.453	2044.	.8030	.9497	.8240	24.14	.8420	0.000343
.340	.455	2134.	.8090	.9510	.8295	24.30	.8343	0.000379
.350	.457	2200.	.8130	.9520	.8333	24.42	.8262	0.000374
.360	.458	2282.	.8157	.9524	.8357	24.49	.8145	0.000414
.370	.459	2384.	.8231	.9543	.8426	24.70	.8015	0.000441
.380	.460	2480.	.8315	.9563	.8493	24.93	.7883	0.000465
.390	.461	2554.	.8391	.9581	.8573	25.15	.7773	0.000485
.400	.461	2644.	.8407	.9595	.8587	25.19	.7642	0.000509

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TABLE A 9. (CONT.)

Y (CM)	Y/THETA	V-F-US	M/ME	RHO/RHIE	U/HF	U-PLUS	TAU/TAU-MAX	V/U
1.139	4.274	2730.	.8452	.9595	.6628	25.32	.7512	.000532
1.147	4.379	2797.	.8512	.9610	.6683	25.48	.7407	.000531
1.150	4.541	2900.	.8545	.9623	.6732	25.63	.7241	.000530
1.253	4.703	3004.	.8648	.9643	.6807	25.89	.7070	.000510
1.278	4.798	3055.	.8660	.9646	.6817	25.89	.6966	.000624
1.316	4.941	3156.	.8730	.9653	.6881	26.09	.6809	.000655
1.352	5.075	3241.	.8743	.9671	.6911	26.18	.6658	.000650
1.389	5.213	3329.	.8811	.9683	.6954	26.31	.6498	.000707
1.424	5.456	3485.	.8887	.9702	.6922	26.52	.6210	.000755
1.497	5.618	3588.	.8882	.9701	.6918	26.51	.6012	.000788
1.523	5.723	3655.	.8954	.9719	.6983	26.71	.5803	.000809
1.548	5.808	3710.	.8973	.9724	.6989	26.76	.5775	.000827
1.568	5.947	3798.	.9042	.9761	.6916	26.95	.5600	.000855
1.620	6.080	3883.	.9049	.9743	.6947	26.96	.5429	.000852
1.642	6.161	3935.	.9090	.9754	.6973	27.08	.5324	.000849
1.673	6.280	4011.	.9139	.9766	.6927	27.21	.5168	.000824
1.713	6.424	4106.	.9183	.9778	.6927	27.33	.4973	.000854
1.741	6.571	4197.	.9221	.9788	.6970	27.43	.4783	.000844
1.773	6.661	4255.	.9260	.9798	.6955	27.54	.4662	.001003
1.808	6.785	4334.	.9270	.9800	.6962	27.57	.4495	.001029
1.850	6.943	4434.	.9334	.9817	.6970	27.74	.4282	.001051
1.875	7.074	4520.	.9366	.9824	.6949	27.83	.4101	.001089
1.904	7.187	4588.	.9394	.9836	.6975	27.91	.3957	.001105
1.940	7.281	4650.	.9415	.9839	.6962	27.96	.3871	.001131
1.980	7.467	4769.	.9480	.9854	.6949	28.14	.3568	.001169
2.000	7.677	5031.	.9575	.9882	.6932	28.40	.3012	.001252
2.133	8.005	5113.	.9606	.9890	.6949	28.49	.2843	.001277
2.167	8.134	5195.	.9648	.9902	.6906	28.59	.2673	.001302
2.203	8.267	5281.	.9635	.9898	.6885	28.56	.2498	.001327
2.228	8.467	5408.	.9694	.9914	.6936	28.72	.2240	.001364
2.292	8.601	5494.	.9718	.9921	.6956	28.78	.2071	.001399
2.338	8.772	5603.	.9766	.9934	.6968	28.91	.1898	.001419
2.341	8.934	5707.	.9793	.9942	.6971	28.94	.1862	.001447
2.410	9.044	5777.	.9802	.9944	.6930	29.01	.1532	.001465
2.442	9.163	5853.	.9819	.9949	.6944	29.05	.1394	.001485
2.460	9.304	5944.	.9862	.9961	.6981	29.17	.1233	.001508
2.486	9.511	6075.	.9849	.9963	.6987	29.19	.1011	.001519
2.541	9.640	6188.	.9848	.9968	.6984	29.24	.0829	.001544
2.622	9.860	6285.	.9923	.9974	.6934	29.33	.0680	.001555
2.643	9.992	6382.	.9936	.9982	.6945	29.37	.0517	.001565
2.694	10.176	6468.	.9943	.9984	.6951	29.39	.0419	.001621
2.741	10.248	6571.	.9936	.9981	.6943	29.34	.0283	.001640
2.774	10.412	6650.	.9950	.9984	.6957	29.43	.0184	.001653
2.815	10.566	6748.	.9951	.9984	.6958	29.41	.0075	.001669
2.842	10.740	6840.	.9973	.9987	.6977	29.47	0.0000	.001678
2.894	10.860	6936.	.9976	.9989	.6980	29.47	0.0000	.001678
2.970	11.144	7119.	.9987	.9994	.6989	29.50	0.0000	.001679
3.045	11.427	7299.	.9993	.9998	.6994	29.52	0.0000	.001679
3.117	11.604	7472.	.9998	.9996	.6999	29.50	0.0000	.001679
3.191	11.937	7674.	1.0001	1.0000	1.0001	29.54	0.0000	.001679
3.272	12.280	7843.	1.0007	1.0002	1.0006	29.55	0.0000	.001679
3.347	12.561	8023.	1.0002	1.0002	1.0002	29.54	0.0000	.001679
3.439	12.904	8247.	1.0009	1.0000	1.0000	29.54	0.0000	.001679
3.514	13.271	8477.	.9991	.9997	.9992	29.51	0.0000	.001679
3.613	13.557	8659.	.9997	.9999	.9997	29.53	0.0000	.001679
3.846	13.824	8840.	1.0008	1.0002	1.0007	29.54	0.0000	.001679

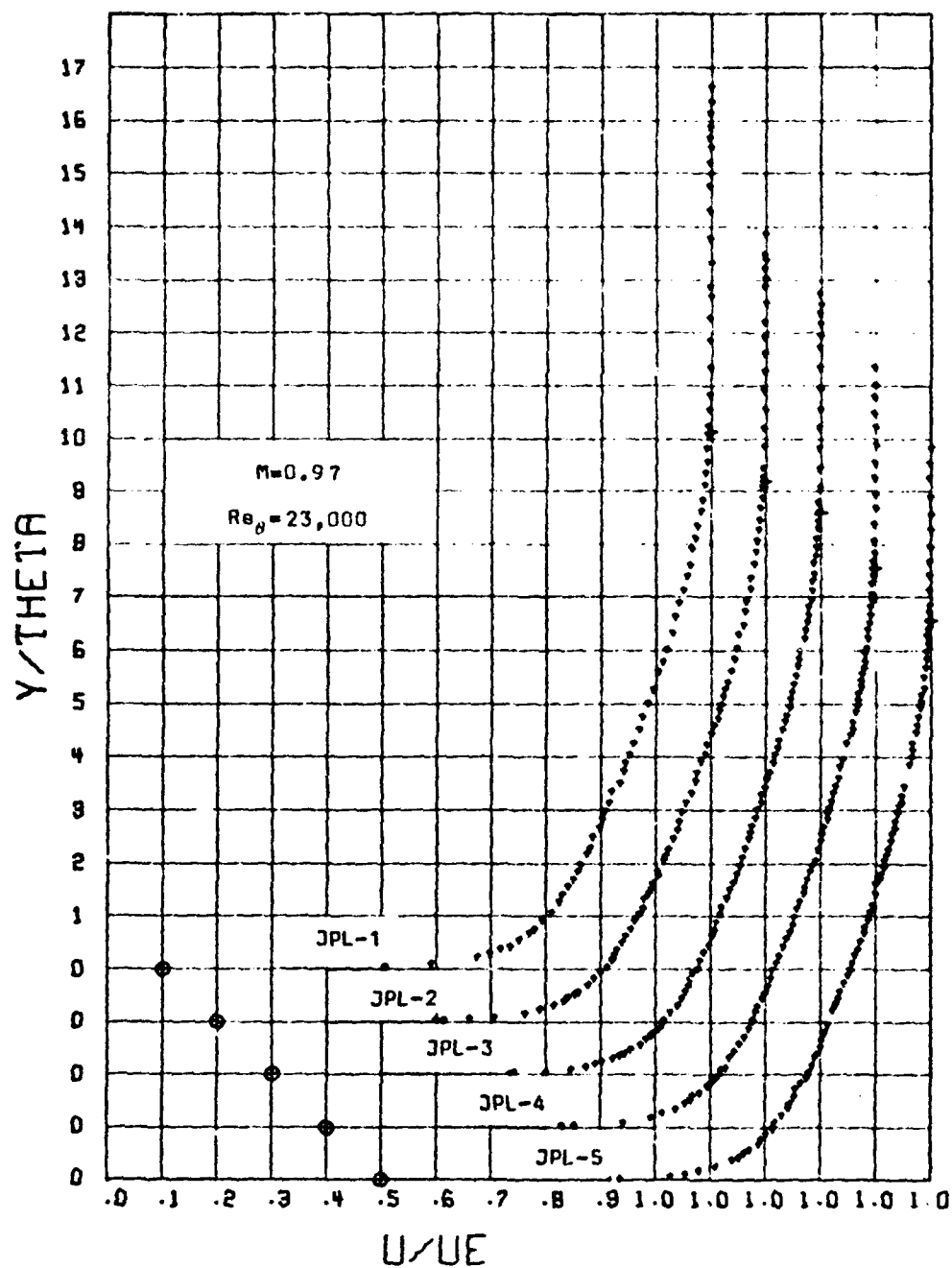


Figure A21. Mean Velocity Profiles.

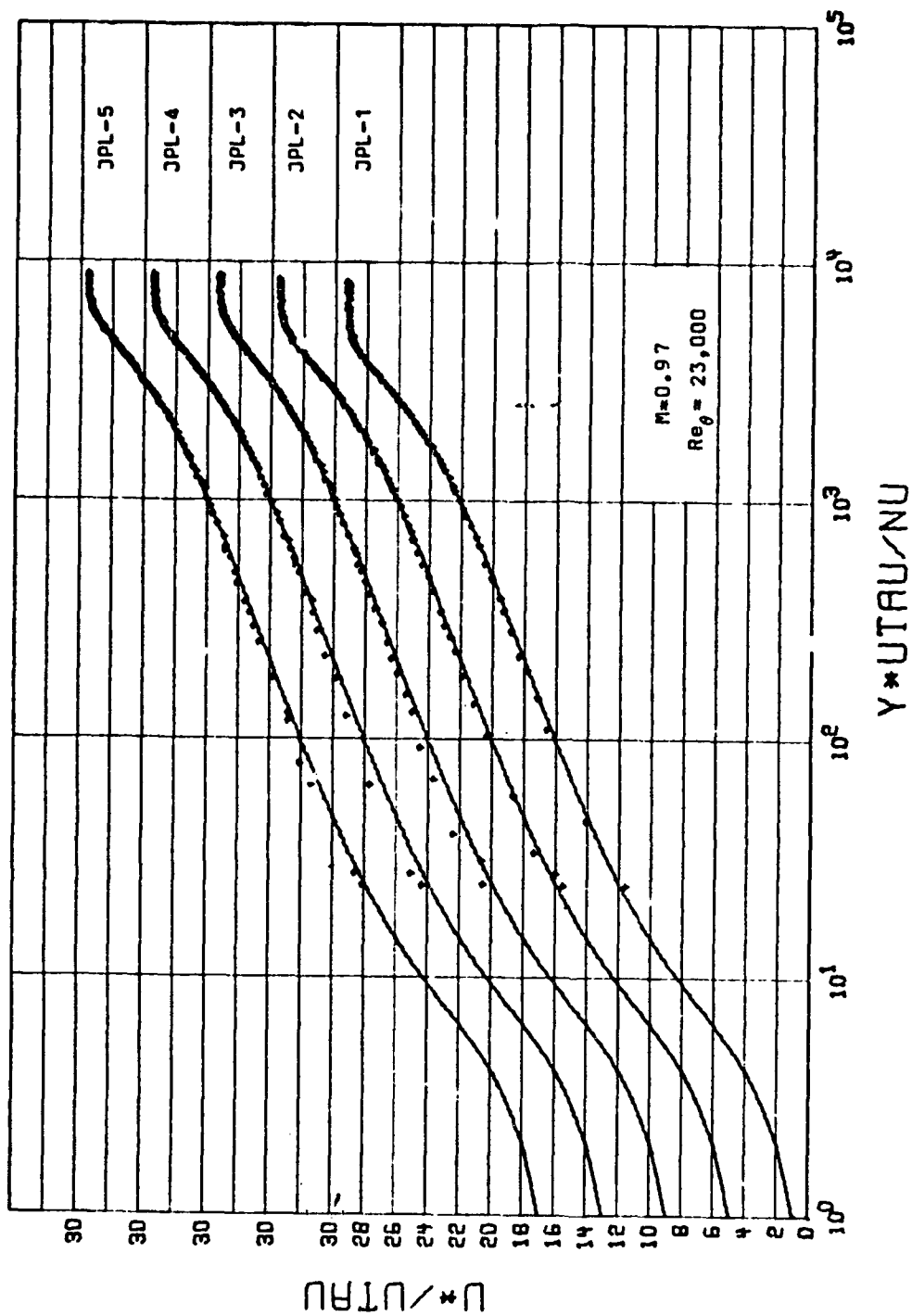


Figure A22. Van Driest Scaled Mean Velocity Profiles.

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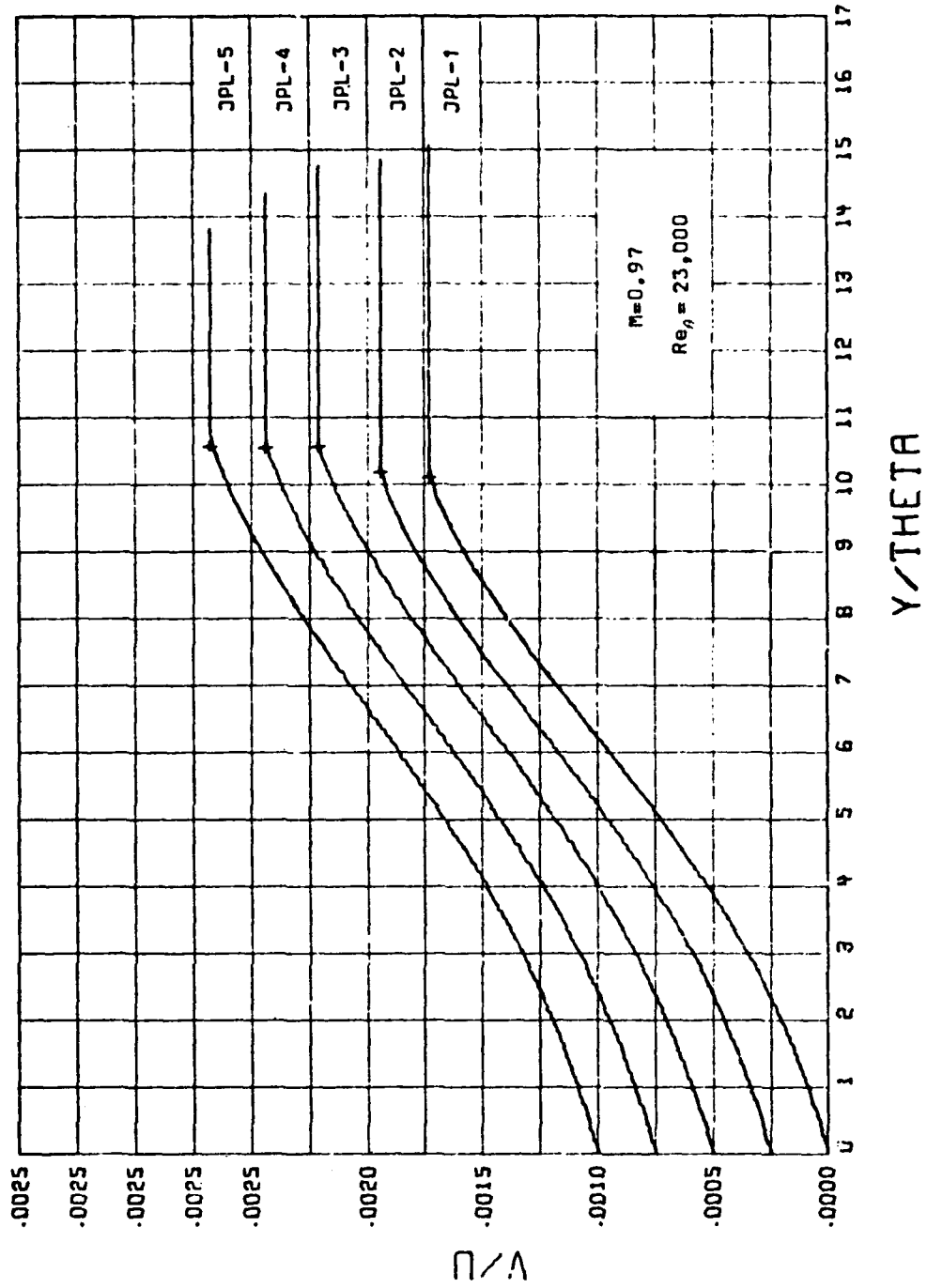


Figure A23. Normal Velocity Distribution.

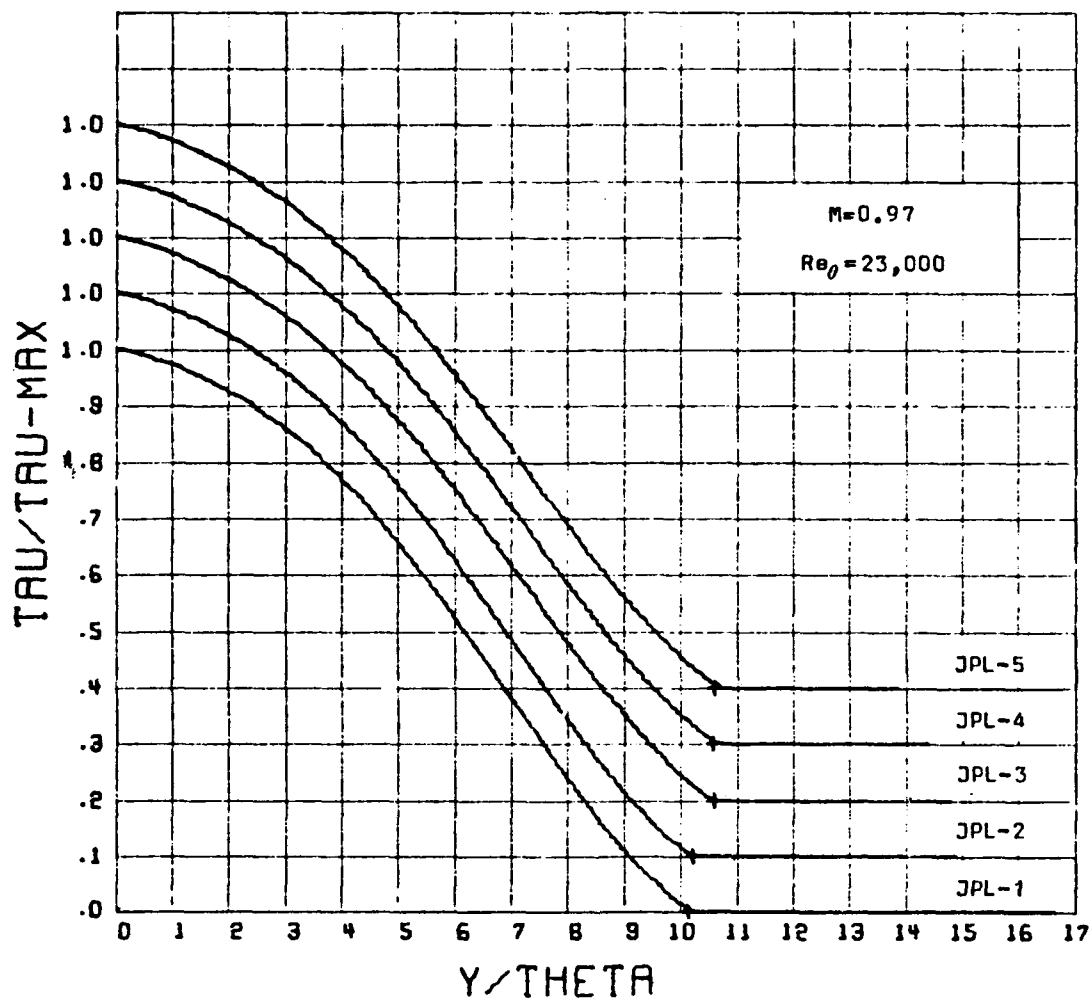


Figure A24. Shear Stress Distribution.

TABLE A10. DATA SUMMARY
PROFILE - JPL-1 - - - PITOT PRESSURE DATAEDGE MACH NO. = .9648
X = 48.43 CM
TOTAL PRESSURE = .1336E+06 N/m²
TOTAL TEMPERATURE = 327.58 DEG-K

Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOF	U/UF	II-PLUS	TAU/TAU-MAX	V/VI
0.000	0.000	0.	0.0000	.8585	0.0000	0.00	1.0000	0.000000
.011	.060	50.	.4543	.8877	.4822	14.31	1.0000	0.000000
.021	.113	94.	.5297	.8982	.5589	16.62	.9989	.000004
.030	.160	133.	.5556	.9022	.5849	17.40	.9978	.000009
.052	.274	227.	.5922	.9081	.6214	18.51	.9950	.000018
.069	.367	305.	.6139	.9118	.6429	19.17	.9924	.000026
.087	.461	383.	.6337	.9153	.6623	19.76	.9896	.000035
.121	.642	533.	.6578	.9197	.6857	20.47	.9868	.000051
.143	.755	628.	.6704	.9221	.6981	20.85	.9848	.000061
.172	.909	755.	.6861	.9251	.7133	21.31	.9742	.000075
.203	1.070	889.	.6956	.9270	.7225	21.60	.9679	.000090
.231	1.217	1011.	.7049	.9292	.7334	21.93	.9619	.000104
.264	1.391	1156.	.7172	.9313	.7432	22.23	.9543	.000121
.279	1.471	1222.	.7226	.9324	.7486	22.39	.9507	.000129
.312	1.645	1367.	.7344	.9348	.7596	22.73	.9424	.000147
.337	1.779	1478.	.7404	.9360	.7652	22.91	.9358	.000161
.351	1.852	1539.	.7430	.9366	.7677	22.99	.9320	.000169
.372	1.959	1628.	.7504	.9381	.7747	23.20	.9263	.000181
.403	2.126	1767.	.7574	.9397	.7813	23.41	.9171	.000199
.430	2.267	1884.	.7663	.9416	.7897	23.66	.9080	.000216
.458	2.414	2006.	.7733	.9431	.7963	23.87	.9001	.000235
.494	2.601	2161.	.7786	.9443	.8012	24.02	.8983	.000254
.528	2.782	2312.	.7920	.9472	.8137	24.41	.8743	.000279
.568	2.996	2489.	.8003	.9491	.8215	24.65	.8611	.000304
.607	3.146	2654.	.8054	.9503	.8282	24.79	.8462	.000335
.647	3.410	2834.	.8131	.9520	.8333	25.02	.8294	.000354
.674	3.571	2967.	.8217	.9540	.8413	25.26	.8161	.000360
.703	3.795	3079.	.8230	.9543	.8424	25.30	.8047	.000410
.728	3.834	3190.	.8304	.9567	.8497	25.53	.7929	.000431
.749	4.006	3329.	.8368	.9574	.8551	25.70	.7776	.000457
.789	4.159	3456.	.8416	.9587	.8596	25.83	.7631	.000482
.819	4.313	3584.	.8466	.9590	.8641	25.94	.7481	.000504
.844	4.447	3695.	.8533	.9615	.8702	26.17	.7346	.000530
.881	4.641	3957.	.8607	.9633	.8769	26.38	.7145	.000564
.916	4.828	4012.	.8648	.9643	.8807	26.49	.6944	.000597
.944	4.975	4134.	.8713	.9659	.8845	26.68	.6781	.000623
.970	5.109	4246.	.8773	.9674	.8900	26.85	.6629	.000648
.996	5.250	4362.	.8826	.9687	.8948	27.00	.6467	.000674
1.024	5.417	4501.	.8852	.9693	.8990	27.27	.6270	.000705
1.043	5.497	4568.	.8887	.9702	.9027	27.17	.6173	.000720
1.075	5.664	4707.	.8937	.9715	.9067	27.31	.6069	.000752

UE = 321.78 M/SEC
RE-DELTA-STAR = 53010.
DELTA STAR = .3113 CM
RE-THETA = 32330.
THETA = .1898 CM
MUWALL = .2491 CM**2/SEC
M = 1.639

LEAST SQUARE FIT PARAMETERS
UTAH = 10.9011 M/SEC
CHISQR = .1104E-04
CF = .001970
YMAX = 1.892 CM

PI = .6331
YMIN = .030 CM
DELTA = 2.0158 CM

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Y (CM)	Y/TMFTA	Y-PLUS	TABLE ALD. W/NE	(CONT.) RMO/RHDE	U/UE	I-PLUS	TAU/TAU-MAX	V/U
1.115	5.872	4879.	.9003	.9732	.9126	27.49	.5711	.001792
1.137	5.992	4979.	.9042	.9741	.9151	27.60	.5558	.000816
1.167	6.144	5107.	.9092	.9754	.9206	27.75	.5361	.000846
1.195	6.293	5229.	.9145	.9768	.9253	27.89	.5169	.000875
1.216	6.407	5324.	.9176	.9774	.9280	27.98	.4975	.000897
1.239	6.527	5429.	.9209	.9785	.9309	28.07	.4860	.000921
1.264	6.661	5535.	.9255	.9797	.9350	28.20	.4662	.000947
1.303	6.861	5702.	.9281	.9803	.9373	28.27	.4412	.000987
1.339	7.009	5824.	.9334	.9817	.9420	28.42	.4213	.001016
1.352	7.122	5919.	.9392	.9833	.9471	28.58	.4058	.001071
1.384	7.290	6057.	.9410	.9834	.9487	28.63	.3831	.001105
1.417	7.463	6202.	.9477	.9856	.9546	28.82	.3595	.001124
1.437	7.570	6291.	.9495	.9860	.9561	28.87	.3450	.001154
1.465	7.718	6413.	.9533	.9871	.9595	28.97	.3251	.001154
1.497	7.885	6557.	.9555	.9877	.9614	29.03	.3024	.001145
1.534	8.073	6713.	.9613	.9892	.9665	29.20	.2768	.001121
1.563	8.279	6841.	.9648	.9902	.9695	29.29	.2566	.001250
1.582	8.333	6924.	.9663	.9906	.9709	29.37	.2435	.001268
1.625	8.560	7113.	.9713	.9920	.9752	29.67	.2145	.001304
1.662	8.754	7275.	.9743	.9928	.9778	29.95	.1903	.001341
1.684	8.848	7369.	.9776	.9937	.9807	29.65	.1764	.001360
1.727	9.095	7558.	.9789	.9949	.9818	29.68	.1494	.001396
1.752	9.229	7665.	.9819	.9957	.9844	29.76	.1340	.001417
1.780	9.430	7836.	.9849	.9967	.9870	29.84	.1118	.001447
1.818	9.577	7958.	.9877	.9965	.9894	29.92	.0962	.001468
1.854	9.754	8114.	.9899	.9971	.9913	29.98	.0772	.001493
1.882	9.965	8281.	.9915	.9976	.9927	30.03	.0580	.001514
1.922	10.125	8414.	.9921	.9978	.9932	30.04	.0436	.001537
1.955	10.299	8558.	.9935	.9981	.9944	30.08	.0289	.001557
1.981	10.433	8670.	.9948	.9985	.9955	30.12	.0184	.001571
2.011	10.593	8803.	.9956	.9987	.9962	30.14	.0067	.001586
2.047	10.781	8959.	.9969	.9991	.9973	30.17	0.0000	.001595
2.067	10.888	9048.	.9969	.9991	.9973	30.17	0.0000	.001595
2.082	11.021	9159.	.9969	.9991	.9973	30.17	0.0000	.001595
2.172	11.443	9509.	.9984	.9995	.9986	30.22	0.0000	.001595
2.237	11.784	9792.	.9984	.9995	.9986	30.22	0.0000	.001595
2.321	12.225	10159.	.9992	.9997	.9993	30.24	0.0000	.001595
2.401	12.647	10509.	1.0000	1.0000	1.0000	30.24	0.0000	.001595
2.504	13.188	10959.	.0001	.9994	.9990	30.23	0.0000	.001595
2.599	13.690	11376.	.0001	1.0000	1.0001	30.26	0.0000	.001595
2.692	14.178	11782.	.0000	.9999	.9998	30.25	0.0000	.001595
2.771	14.593	12127.	1.0000	1.0000	1.0000	30.26	0.0000	.001595
2.860	15.061	12516.	.9997	.9999	.9998	30.25	0.0000	.001595
2.947	15.523	12899.	1.0002	1.0000	1.0002	30.27	0.0000	.001595
3.039	16.004	13296.	.9997	.9999	.9998	30.26	0.0000	.001595
3.139	16.532	13738.	.9995	.9998	.9995	30.24	0.0000	.001595

TABLE A10. (CONT.)
PROFILE - JPL-2 - - - PITOT PRESSURE DATAEDGE MACH NO. = .9626
X = 26.21 CM
TOTAL PRESSURE = 1327E+06 N/M²
TOTAL TEMPERATURE = 329.76 DEG-K

UF = 322.24 M/SEC RE-DELTA-STAR = 59320.				DELTA STAR = .3559 CM RE-THETA = 36250.				THETA = .2175 CM M = 1.636 MUTUAL = .2531 CM#02/SEC				DELTA = 2.3454 CM			
LEAST SQUARE FIT PARAMETERS				CF = .001940 YMAX = 2.221 CM				PI = .4210 YMIN = .044 CM							
V (CM)	Y/THETA	Y-PLUS	M/ME	RM/RMDE	U/HF	I-PLUS	TAU/TAI-MAX	V/U							
0.000	0.000	0.	0.0000	.8590	0.0000	0.00	1.0000	0.000000							
.010	.044	43.	.4443	.8869	.4717	14.11	1.0000	0.000000							
.016	.075	70.	.4724	.8905	.5006	14.98	.9994	0.000002							
.025	.114	108.	.5376	.8998	.5667	17.99	.9986	0.000016							
.044	.204	189.	.5719	.9051	.6011	18.04	.9986	0.000113							
.074	.250	233.	.5957	.9090	.6264	18.76	.9984	0.00017							
.074	.344	320.	.6118	.9118	.6407	19.25	.9979	0.00024							
.077	.402	374.	.6257	.9147	.6544	19.67	.9972	0.00030							
.100	.461	429.	.6383	.9165	.6667	20.05	.9967	0.00035							
.119	.544	510.	.6492	.9184	.6774	20.38	.9967	0.00042							
.139	.642	597.	.6671	.9218	.6949	20.91	.9964	0.00050							
.157	.723	673.	.6740	.9231	.7015	21.12	.9908	0.00057							
.175	.805	749.	.6813	.9245	.7086	21.34	.9779	0.00064							
.203	.914	849.	.6896	.9261	.7146	21.58	.9771	0.00076							
.217	.997	928.	.6969	.9274	.7236	21.80	.9707	0.00082							
.244	1.109	1032.	.7054	.9295	.7318	22.05	.9663	0.00092							
.274	1.260	1173.	.7147	.9310	.7407	22.33	.9600	0.00104							
.302	1.380	1293.	.7212	.9323	.7469	22.52	.9544	0.00118							
.327	1.505	1401.	.7289	.9330	.7542	22.75	.9491	0.00129							
.353	1.622	1510.	.7363	.9355	.7613	22.97	.9437	0.00141							
.378	1.739	1614.	.7427	.9367	.7688	23.14	.9380	0.00153							
.416	1.914	1782.	.7501	.9383	.7763	23.37	.9281	0.00171							
.453	2.083	1939.	.7570	.9398	.7809	23.58	.9200	0.00189							
.477	2.194	2043.	.7617	.9412	.7872	23.77	.9138	0.00201							
.508	2.316	2173.	.7690	.9424	.7921	23.93	.9067	0.00217							
.533	2.451	2282.	.7734	.9433	.7963	24.06	.8987	0.00231							
.572	2.632	2450.	.7852	.9459	.8073	24.40	.8874	0.00252							
.604	2.778	2584.	.7873	.9464	.8083	24.66	.8778	0.00270							
.628	2.889	2689.	.7893	.9479	.8136	24.85	.8703	0.00284							
.668	3.070	2858.	.8022	.9498	.8231	24.90	.8575	0.00304							
.685	3.152	2934.	.8071	.9509	.8277	25.04	.8515	0.00314							
.731	3.362	3130.	.8116	.9519	.8319	25.17	.8456	0.00347							
.759	3.490	3249.	.8145	.9525	.8346	25.25	.8374	0.00365							
.789	3.630	3379.	.8208	.9540	.8404	25.44	.8288	0.00385							
.812	3.734	3477.	.8254	.9551	.8446	25.57	.8201	0.00400							
.843	3.875	3607.	.8313	.9564	.8500	25.74	.8130	0.00441							
.874	4.022	3744.	.8363	.9574	.8546	25.88	.8079	0.00443							
.914	4.154	3888.	.8414	.9588	.8593	26.03	.8026	0.00464							
.934	4.294	3999.	.8475	.9603	.8649	26.21	.7963	0.00484							
.953	4.456	4146.	.8524	.9614	.8683	26.35	.7899	0.00512							
.995	4.574	4260.	.8572	.9624	.8737	26.48	.7846	0.00532							

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TABLE A10. (CONT.)

Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHME	U/Ue	U-PLUS	TAU/TAU-MAX	V/U
1.036	4.763	4434.	.6623	.9438	.8783	26.63	.7073	.00563
1.069	4.915	4575.	.8707	.9559	.8859	26.87	.6912	.00589
1.102	5.066	4716.	.8745	.9668	.8894	26.98	.6747	.00615
1.134	5.253	4890.	.8792	.9800	.8936	27.11	.6537	.00648
1.176	5.495	5031.	.8861	.9997	.9099	27.31	.6263	.00675
1.219	5.604	5216.	.8895	.9705	.9078	27.40	.6130	.00712
1.249	5.743	5346.	.8945	.9718	.9074	27.55	.5959	.00738
1.285	5.907	5499.	.9040	.9742	.9158	27.81	.5742	.00768
1.323	6.082	5682.	.9066	.9767	.9164	27.83	.5565	.00800
1.361	6.210	5781.	.9100	.9757	.9212	27.98	.5383	.00825
1.399	6.346	5944.	.9157	.9772	.9263	28.15	.5160	.00850
1.429	6.567	6115.	.9228	.9790	.9326	28.35	.4975	.00882
1.468	6.748	6281.	.9250	.9796	.9346	28.41	.4889	.00926
1.497	6.882	6406.	.9311	.9812	.9400	28.58	.4512	.00952
1.526	7.016	6531.	.9334	.9818	.9420	28.64	.4334	.00978
1.563	7.185	6689.	.9371	.9828	.9453	28.75	.4109	.01010
1.602	7.357	6857.	.9416	.9840	.9493	28.88	.3866	.01044
1.640	7.542	7020.	.9475	.9856	.9544	29.04	.3634	.01077
1.672	7.627	7156.	.9503	.9863	.9568	29.12	.3440	.01104
1.709	7.857	7314.	.9535	.9872	.9597	29.21	.3215	.01135
1.743	8.015	7461.	.9578	.9883	.9634	29.33	.3007	.01164
1.780	8.184	7618.	.9627	.9896	.9677	29.46	.2785	.01194
1.809	8.312	7737.	.9667	.9907	.9712	29.59	.2670	.01217
1.846	8.487	7900.	.9685	.9912	.9728	29.63	.2395	.01248
1.884	8.586	7995.	.9701	.9917	.9742	29.67	.2270	.01264
1.905	8.756	8131.	.9735	.9926	.9771	29.77	.2059	.01293
1.938	8.903	8292.	.9775	.9937	.9806	29.98	.1874	.01318
1.971	9.059	8433.	.9789	.9941	.9818	29.92	.1694	.01342
2.001	9.200	8564.	.9816	.9948	.9842	29.99	.1530	.01364
2.029	9.328	8683.	.9838	.9954	.9840	30.05	.1384	.01383
2.067	9.503	8866.	.9857	.9960	.9877	30.10	.1191	.01408
2.099	9.649	8982.	.9876	.9965	.9893	30.16	.1035	.01429
2.123	9.760	9085.	.9892	.9969	.9907	30.20	.0821	.01444
2.160	9.929	9243.	.9897	.9971	.9911	30.21	.0753	.01466
2.189	10.075	9379.	.9920	.9977	.9931	30.28	.0615	.01484
2.221	10.210	9504.	.9932	.9980	.9941	30.31	.0493	.01500
2.245	10.320	9607.	.9948	.9985	.9955	30.35	.0397	.01512
2.272	10.443	9721.	.9963	.9984	.9951	30.34	.0296	.01525
2.310	10.618	9884.	.9955	.9987	.9961	30.37	.0158	.01543
2.341	10.744	10020.	.9965	.9990	.9970	30.40	.0055	.01554
2.371	10.898	10165.	.9973	.9992	.9977	30.42	0.0000	.01564
2.397	11.021	10259.	.9982	.9995	.9985	30.45	0.0000	.01564
2.473	11.371	10585.	.9986	.9996	.9988	30.46	0.0000	.01564
2.537	11.663	10957.	.9995	.9998	.9994	30.49	0.0000	.01564
2.600	11.955	11128.	.9999	.9997	.9990	30.47	0.0000	.01564
2.654	12.200	11357.	.9995	.9998	.9996	30.49	0.0000	.01564
2.724	12.521	11656.	.9995	.9998	.9996	30.49	0.0000	.01564
2.745	12.854	11958.	.9993	.9998	.9996	30.49	0.0000	.01564
2.862	13.157	12248.	.9993	.9998	.9994	30.49	0.0000	.01564
2.933	13.485	12552.	1.0011	1.0003	1.0010	30.53	0.0000	.01564
2.999	13.788	12835.	.9993	.9998	.9994	30.48	0.0000	.01564
3.063	14.080	13107.	.9997	.9999	.9997	30.49	0.0000	.01564
3.124	14.360	13368.	.9992	.9997	.9993	30.48	0.0000	.01564
3.147	14.465	13465.	1.0005	1.0001	1.0004	30.51	0.0000	.01564
3.187	14.652	13639.	.9994	.9998	.9995	30.49	0.0000	.01564
3.235	14.874	13846.	1.0001	1.0000	1.0001	30.50	0.0000	.01564

TABLE A10. (CONT.)
PROFILE - JPL-3 -- - PITOT PRESSURE DATAEDGE MACH NO. = .9613
X = -7.62 CM
TOTAL PRESSURE = .1339E+06 N/M²
TOTAL TEMPERATURE = 328.06 DEG-K

UW = 321.05 M/SEC RE-DELTA-STAR = 62110.		DELTA STAR = .3667 CM RE-THETA = 38500.		THETA = .2273 CM NUHALL = .2483 CM**2/SEC		H = 1.613		
LEAST SQUARE FIT PARAMETERS UTAH = 10.227 M/SEC CMISOR = .2048E-04		CF = .001953 YMAX = 2.418 CM		PI = .5501 VMIN = .038 CM		DELTA = 2.5515 CM		
Y (CM)	Y/THETA	Y-PLUS	M/WE	RHO/RHOF	U/UE	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.8594	0.0000	0.00	1.0000	0.000000
.010	.044	44.	.4647	.8897	.4927	14.70	1.0000	0.000000
.021	.094	94.	.5254	.8982	.5544	16.56	.9990	.000004
.030	.134	132.	.5568	.9029	.5859	17.52	.9982	.000007
.048	.167	166.	.5808	.9068	.6089	18.25	.9974	.000010
.060	.223	221.	.5991	.9098	.6280	18.80	.9960	.000015
.065	.280	277.	.6135	.9123	.6424	19.24	.9942	.000020
.145	.374	370.	.6295	.9151	.6581	19.72	.9918	.000027
.104	.458	453.	.6444	.9178	.6727	20.17	.9893	.000034
.110	.486	481.	.6465	.9181	.6747	20.23	.9884	.000037
.123	.541	536.	.6801	.9206	.6800	20.64	.9847	.000042
.142	.625	619.	.6828	.9211	.6904	20.72	.9839	.000049
.152	.670	664.	.6799	.9243	.7071	21.23	.9824	.000053
.172	.804	797.	.6857	.9255	.7179	21.40	.9776	.000064
.209	.921	913.	.6950	.9273	.7217	21.68	.9733	.000075
.237	1.044	1035.	.7045	.9292	.7309	21.96	.9685	.000086
.249	1.126	1173.	.7158	.9314	.7417	22.29	.9629	.000098
.264	1.206	1284.	.7255	.9328	.7481	22.49	.9582	.000109
.325	1.437	1417.	.7283	.9339	.7536	22.66	.9523	.000121
.354	1.558	1544.	.7389	.9361	.7636	22.97	.9465	.000134
.403	1.731	1716.	.7479	.9380	.7722	23.24	.9383	.000151
.415	1.824	1810.	.7578	.9393	.7778	23.41	.9337	.000160
.440	2.111	2092.	.7656	.9416	.7880	23.73	.9190	.000189
.504	2.228	2209.	.7731	.9434	.7960	23.97	.9126	.000202
.541	2.379	2358.	.7746	.9437	.7974	24.02	.9040	.000218
.543	2.480	2457.	.7841	.9458	.8082	24.29	.8982	.000230
.564	2.614	2500.	.7860	.9462	.8089	24.35	.8901	.000245
.617	2.714	2600.	.7910	.9473	.8127	24.49	.8839	.000254
.645	2.837	2612.	.7950	.9482	.8164	24.61	.8761	.000271
.671	2.955	2628.	.8002	.9494	.8212	24.76	.8684	.000285
.707	3.111	3083.	.8043	.9512	.8267	24.99	.8578	.000306
.719	3.251	3221.	.8100	.9516	.8303	25.04	.8480	.000322
.745	3.368	3337.	.8155	.9529	.8354	25.20	.8395	.000337
.800	3.519	3487.	.8208	.9541	.8403	25.36	.8282	.000357
.833	3.664	3631.	.8263	.9554	.8454	25.52	.8170	.000376
.869	3.781	3747.	.8302	.9563	.8490	25.63	.8077	.000392
.899	3.910	3874.	.8331	.9570	.8516	25.71	.7973	.000410
.949	4.044	4107.	.8408	.9588	.8547	25.93	.7860	.000429
.964	4.184	4118.	.8421	.9591	.8500	25.97	.7745	.000444
.970	4.247	4229.	.8459	.9600	.8433	26.08	.7667	.000457
.975	4.370	4310.	.8502	.9610	.8473	26.20	.7566	.000479

TABLE A10. (CONT.)

Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHNE	U/U/E	U-PLUS	TAU/TAU-MAX	V/U
1.033	4.547	4505.	.8557	.9623	.8722	26.36	.7412	.000504
1.045	4.684	4644.	.8597	.9633	.8759	26.47	.7280	.000526
1.064	4.815	4771.	.8676	.9652	.8831	26.70	.7156	.000546
1.132	4.937	4937.	.8720	.9663	.8871	26.82	.6990	.000573
1.149	5.139	5092.	.8740	.9668	.8889	26.88	.6831	.000594
1.161	5.239	5192.	.8796	.9681	.8939	27.04	.6727	.000614
1.224	5.401	5352.	.8847	.9694	.8985	27.18	.6556	.000641
1.264	5.564	5513.	.8857	.9697	.8995	27.21	.6381	.000669
1.297	5.709	5657.	.8908	.9709	.9040	27.36	.6221	.000693
1.324	5.826	5773.	.8953	.9721	.9080	27.48	.6090	.000713
1.356	5.944	5912.	.8979	.9727	.9104	27.56	.5931	.000738
1.393	6.128	6077.	.9056	.9747	.9172	27.77	.5745	.000766
1.435	6.307	6243.	.9139	.9768	.9246	28.01	.5422	.000814
1.484	6.530	6471.	.9214	.9774	.9268	28.01	.5269	.000837
1.521	6.692	6631.	.9214	.9787	.9313	28.22	.5073	.000866
1.544	6.837	6775.	.9214	.9793	.9332	28.28	.4895	.000892
1.581	6.955	6891.	.9278	.9804	.9370	28.40	.4751	.000913
1.617	7.117	7052.	.9310	.9812	.9398	28.49	.4550	.000942
1.647	7.245	7179.	.9350	.9823	.9433	28.60	.4390	.000965
1.681	7.396	7329.	.9386	.9832	.9466	28.70	.4198	.000993
1.706	7.508	7439.	.9412	.9839	.9488	28.77	.4041	.001012
1.737	7.642	7572.	.9447	.9848	.9519	28.87	.3892	.001036
1.770	7.787	7716.	.9468	.9854	.9538	28.93	.3709	.001062
1.805	7.943	7871.	.9517	.9867	.9580	29.07	.3513	.001090
1.841	8.100	8026.	.9552	.9877	.9612	29.16	.3316	.001117
1.869	8.223	8148.	.9574	.9883	.9631	29.23	.3163	.001138
1.889	8.312	8236.	.9605	.9891	.9658	29.31	.3052	.001154
1.917	8.435	8358.	.9625	.9896	.9675	29.37	.2899	.001175
1.945	8.531	8452.	.9653	.9913	.9730	29.54	.2537	.001225
2.012	8.854	8773.	.9717	.9921	.9756	29.62	.2389	.001245
2.045	9.099	8917.	.9727	.9924	.9764	29.65	.2216	.001268
2.073	9.272	9039.	.9765	.9934	.9797	29.75	.2072	.001284
2.103	9.466	9166.	.9778	.9938	.9809	29.79	.1923	.001308
2.132	9.672	9294.	.9787	.9940	.9816	29.82	.1776	.001327
2.160	9.884	9416.	.9814	.9948	.9839	29.89	.1639	.001346
2.184	10.106	9532.	.9843	.9956	.9845	29.97	.1510	.001363
2.221	10.370	9681.	.9860	.9960	.9879	30.02	.1347	.001385
2.255	10.621	9831.	.9862	.9961	.9881	30.02	.1190	.001406
2.298	10.864	9975.	.9873	.9964	.9891	30.05	.1042	.001425
2.313	11.078	10085.	.9903	.9973	.9917	30.14	.0922	.001440
2.349	11.334	10240.	.9913	.9975	.9925	30.16	.0782	.001459
2.392	11.524	10429.	.9927	.9979	.9938	30.20	.0609	.001482
2.418	11.746	10530.	.9935	.9982	.9944	30.23	.0511	.001495
2.452	11.986	10686.	.9947	.9985	.9955	30.26	.0344	.001511
2.481	12.245	10814.	.9954	.9987	.9962	30.28	.0282	.001525
2.520	12.511	10963.	.9963	.9989	.9968	30.30	.0151	.001542
2.550	12.787	11115.	.9963	.9989	.9968	30.30	.0060	.001554
2.584	13.068	11264.	.9972	.9992	.9976	30.33	.0000	.001561
2.694	13.854	11746.	.9991	.9997	.9992	30.38	.0000	.001561
2.921	15.082	12984.	.9996	.9998	.9996	30.39	.0000	.001561
3.027	15.317	13198.	1.0004	1.0001	1.0003	30.41	.0000	.001561
3.378	16.859	14724.	1.0002	1.0000	1.0002	30.41	.0000	.001561
3.418	17.038	14901.	.9994	.9998	.9995	30.39	.0000	.001561
3.487	17.351	15211.	.9987	.9996	.9999	30.37	.0000	.001561

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TABLE A10. (CONT.)

PROFILE - JPL-4 - - - PITOT PRESSURE DATA									
EDGE MACH NO. = .9637 TOTAL PRESSURE = .1330E+06 N/M ² TOTAL TEMPERATURE = 330.01 DEG-K									
X = 0.00 CM THETA = .2386 CM MUWALL = .2528 CM*2/SEC H = 1.631 DELTA = 2.6280 CM									
RE-DELTA-STAR = .65100. DELTA STAR = .3894 CM PI = .5887 YMIN = .036 CM									
LEAST SQUARE FIT PARAMETERS CF = .001925 YMAX = 2.465 CM									
UTAU = 10.6043 M/SEC CHISQR = .9616E-05									
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOE	U/U _F	I-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.8588	0.0000	0.00	1.0000	0.000000	
.010	.042	43.	.4390	.8849	.4571	13.72	1.0000	0.000000	
.020	.085	97.	.5027	.8944	.5315	15.98		.000000	
.030	.128	157.	.5549	.9022	.5842	17.59	.9977	.000009	
.040	.171	204.	.5823	.9067	.6116	18.43	.9966	.000013	
.050	.214	309.	.6044	.9101	.6334	19.10	.9939	.000021	
.060	.257	401.	.6250	.9130	.6518	19.72	.9913	.000029	
.070	.300	488.	.6443	.9174	.6724	20.30	.9888	.000034	
.080	.343	591.	.6595	.9202	.6875	20.76	.9855	.000044	
.090	.386	700.	.6739	.9229	.7014	21.19	.9820	.000053	
.100	.429	808.	.6889	.9252	.7146	21.55	.9782	.000062	
.110	.472	911.	.6995	.9278	.7241	21.87	.9745	.000071	
.120	.515	1011.	.7072	.9294	.7334	22.19	.9713	.000077	
.130	.558	1118.	.7115	.9302	.7377	22.52	.9679	.000085	
.140	.601	1220.	.7222	.9334	.7457	22.83	.9641	.000094	
.150	.644	1316.	.7272	.9363	.7526	23.19	.9544	.000104	
.160	.687	1408.	.7306	.9378	.7577	23.41	.9479	.000114	
.170	.730	1496.	.7483	.9390	.7727	23.57	.9371	.000132	
.180	.773	1584.	.7538	.9400	.7770	23.71	.9323	.000162	
.190	.816	1672.	.7586	.9413	.7824	23.89	.9258	.000175	
.200	.859	1741.	.7644	.9417	.7869	23.95	.9189	.000184	
.210	.902	1809.	.7701	.9425	.7932	24.05	.9143	.000197	
.220	.945	1862.	.7801	.9447	.8076	24.36	.9080	.000209	
.230	.988	1911.	.7878	.9464	.8098	24.57	.8994	.000225	
.240	1.031	1957.	.7909	.9471	.8127	24.66	.8925	.000238	
.250	1.074	2003.	.7952	.9481	.8147	24.79	.8838	.000255	
.260	1.117	2044.	.8028	.9490	.8245	25.01	.8748	.000271	
.270	1.160	2085.	.8058	.9505	.8255	25.10	.8655	.000288	
.280	1.203	2124.	.8114	.9518	.8319	25.26	.8558	.000305	
.290	1.246	2159.	.8188	.9530	.8367	25.42	.8435	.000327	
.300	1.289	2194.	.8260	.9551	.8428	25.64	.8323	.000347	
.310	1.332	2224.	.8337	.9559	.8478	25.76	.8190	.000370	
.320	1.375	2254.	.8405	.9579	.8558	26.02	.8065	.000391	
.330	1.418	2284.	.8475	.9595	.8595	26.10	.7912	.000417	
.340	1.461	2316.	.8533	.9602	.8649	26.30	.7787	.000438	
.350	1.504	2346.	.8595	.9616	.8702	26.47	.7644	.000462	
.360	1.547	2376.	.8623	.9628	.8749	26.62	.7495	.000484	
.370	1.590	2407.		.9638	.8784	26.73	.7316	.000515	
.380	1.633	2437.					.7163	.000540	

TABLE A10. (CONT.)
RMO/RMDC
M/N

Y (CM)	Y/TWETA	Y-PLUS	WAVE	TABLE A10. (CONT.) RMO/RMDC M/N	U/UIE	U-PLUS	TAU/TAU-MAX	V/U
1.144	4.879	4.977	.8689	.9656	.8843	26.92	.7035	.00561
1.166	5.017	5.112	.8738	.9666	.8888	27.06	.6897	.00562
1.230	5.155	5.259	.8787	.9678	.8932	27.20	.6745	.00563
1.243	5.294	5.400	.8817	.9685	.8959	27.28	.6595	.00563
1.289	5.400	5.508	.8855	.9695	.8971	27.39	.6478	.00564
1.322	5.539	5.650	.8908	.9708	.9041	27.55	.6323	.00567
1.364	5.735	5.851	.8954	.9720	.9082	27.68	.6198	.00575
1.405	5.890	6.008	.8992	.9729	.9116	27.87	.6014	.00575
1.437	6.023	6.144	.9023	.9737	.9146	28.05	.5760	.00574
1.474	6.177	6.301	.9084	.9753	.9195	28.05	.5575	.00574
1.511	6.331	6.459	.9128	.9764	.9236	28.17	.5383	.00561
1.553	6.484	6.594	.9174	.9775	.9279	28.30	.5222	.00563
1.576	6.603	6.735	.9206	.9784	.9307	28.39	.5050	.00561
1.599	6.741	6.877	.9238	.9793	.9337	28.48	.4874	.00567
1.644	6.890	7.028	.9264	.9800	.9360	28.56	.4687	.00564
1.670	7.039	7.180	.9310	.9811	.9398	28.68	.4496	.00561
1.713	7.177	7.322	.9348	.9822	.9432	28.79	.4319	.00566
1.751	7.337	7.486	.9392	.9833	.9472	28.92	.4113	.00565
1.786	7.496	7.646	.9430	.9843	.9506	29.02	.3921	.00562
1.814	7.624	7.778	.9453	.9849	.9525	29.09	.3742	.00567
1.852	7.773	7.930	.9491	.9860	.9559	29.20	.3553	.00567
1.896	7.944	8.103	.9544	.9874	.9604	29.34	.3330	.00564
1.929	8.082	8.244	.9582	.9884	.9638	29.45	.3153	.00569
1.960	8.215	8.380	.9612	.9892	.9666	29.53	.2983	.00562
2.002	8.391	8.559	.9652	.9903	.9699	29.65	.2761	.00565
2.032	8.513	8.684	.9686	.9907	.9711	29.68	.2508	.00563
2.068	8.657	8.841	.9716	.9911	.9723	29.72	.2247	.00569
2.101	8.806	8.983	.9732	.9925	.9754	29.82	.2081	.00565
2.134	8.944	9.124	.9732	.9925	.9754	29.87	.1901	.00569
2.171	9.093	9.281	.9773	.9936	.9806	29.98	.1719	.00564
2.208	9.243	9.438	.9792	.9942	.9821	30.04	.1530	.00562
2.244	9.402	9.590	.9827	.9951	.9851	30.13	.1340	.00566
2.280	9.554	9.742	.9838	.9954	.9860	30.16	.1175	.00568
2.317	9.710	9.905	.9862	.9961	.9881	30.23	.1015	.00564
2.353	9.872	10.101	.9874	.9964	.9891	30.26	.0873	.00569
2.384	10.040	10.242	.9890	.9969	.9906	30.31	.0719	.00564
2.434	10.200	10.405	.9916	.9976	.9927	30.38	.0577	.00562
2.465	10.377	10.535	.9926	.9979	.9937	30.41	.0471	.00566
2.503	10.487	10.698	.9945	.9984	.9952	30.46	.0322	.00564
2.546	10.668	10.882	.9964	.9984	.9951	30.46	.0207	.00569
2.581	10.817	11.034	.9963	.9989	.9958	30.51	.0070	.00564
2.627	11.009	11.210	.9970	.9991	.9974	30.53	.0000	.00569
2.668	11.179	11.403	.9979	.9994	.9982	30.55	.0000	.00564
2.705	11.333	11.561	.9984	.9995	.9984	30.57	.0000	.00565
2.747	11.679	11.914	1.0000	1.0000	1.0000	30.61	.0000	.00565
2.783	11.998	12.239	1.0002	1.0000	1.0002	30.62	.0000	.00565
2.827	12.307	12.554	.9991	.9997	.9992	30.59	.0000	.00565
3.024	12.679	12.914	1.0000	1.0000	1.0000	30.61	.0000	.00565
3.102	12.999	13.240	1.0001	1.0000	1.0001	30.62	.0000	.00565
3.174	13.318	13.564	1.0000	1.0000	1.0000	30.61	.0000	.00565
3.252	13.626	13.890	1.0000	1.0002	1.0006	30.63	.0000	.00565
3.356	14.063	14.345	.9997	.9999	.9997	30.60	.0000	.00565
3.443	14.435	14.726	.9999	.9999	.9999	30.61	.0000	.00565
3.543	14.595	14.889	1.0001	1.0001	1.0004	30.63	.0000	.00565
3.602	15.095	15.398	1.0001	1.0002	1.0007	30.61	.0000	.00565
3.691	15.467	15.778	.9999	.9999	.9999	30.61	.0000	.00565

TABLE A10. (CONT.)
PROFILE - JPL-5 - - - PITOT PRESSURE DATA

EDGE MACH NO. = .9606			TOTAL PRESSURE = .1331E+06 N/M ²			TOTAL TEMPERATURE = 330.49 DEG-K			H = 1.627		
X = 7.62 CM			DELTA STAR = .4076 CM			THETA = .2515 CM			MINALL = .2521 CM/2/SEC		
RE-DELTA-STAR = 67630.			RE-THETA = 41550.			PI = .5925			DELTA = 2.7502 CM		
LEAST SQUARE FIT PARAMETERS			CF = .001911			YMIN = .038 CM					
UTAU = 10.7382 M/SEC			YMAX = 2.603 CM								
CHISO = .1221E-04											
Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/U			
0.000	0.000	0.	0.0000	.8595	0.0000	0.00	1.0000	0.000000			
.010	.040	43.	.4301	.8855	.4571	13.77	1.0000	0.000000			
.021	.086	48.	.4526	.8883	.4803	14.48	.9999	0.000000			
.038	.152	91.	.5081	.8958	.5348	16.21	.9991	0.000003			
.052	.207	142.	.5481	.9017	.5772	17.44	.9977	0.000009			
.064	.273	221.	.5784	.9065	.6075	18.38	.9963	0.000013			
.081	.324	292.	.5992	.9100	.6241	19.01	.9946	0.000019			
.104	.415	346.	.6218	.9138	.6505	19.70	.9932	0.000123			
.127	.506	443.	.6342	.9160	.6766	20.08	.9906	0.000031			
.144	.577	540.	.6503	.9189	.6784	20.57	.9877	0.000038			
.162	.634	616.	.6600	.9207	.6788	20.86	.9854	0.000044			
.181	.681	778.	.6734	.9232	.7008	21.26	.9802	0.000057			
.204	.730	908.	.6918	.9264	.7196	21.82	.9758	0.000068			
.234	.842	1008.	.7016	.9287	.7241	22.11	.9724	0.000075			
.266	1.044	1136.	.7092	.9302	.7353	22.34	.9676	0.000086			
.292	1.166	1246.	.7157	.9315	.7416	22.53	.9635	0.000095			
.322	1.328	1417.	.7223	.9328	.7479	22.73	.9566	0.000110			
.365	1.460	1557.	.7324	.9349	.7575	23.03	.9507	0.000123			
.398	1.591	1698.	.7404	.9365	.7651	23.27	.9446	0.000135			
.434	1.733	1850.	.7448	.9374	.7693	23.40	.9378	0.000149			
.471	1.890	2006.	.7554	.9397	.7764	23.72	.9304	0.000164			
.509	2.032	2169.	.7578	.9402	.7815	23.78	.9224	0.000180			
.546	2.179	2326.	.7704	.9429	.7934	24.16	.9144	0.000195			
.581	2.321	2477.	.7734	.9435	.7962	24.24	.9063	0.000211			
.612	2.463	2607.	.7765	.9442	.7981	24.33	.8991	0.000226			
.644	2.580	2753.	.7868	.9454	.8087	24.64	.8907	0.000240			
.674	2.707	2888.	.7917	.9476	.8133	24.78	.8827	0.000254			
.714	2.859	3050.	.7944	.9487	.8158	24.86	.8727	0.000273			
.754	3.024	3229.	.8050	.9505	.8256	25.17	.8612	0.000293			
.791	3.158	3370.	.8068	.9510	.8274	25.23	.8518	0.000310			
.835	3.335	3559.	.8129	.9523	.8330	25.40	.8397	0.000331			
.871	3.477	3710.	.8213	.9543	.8407	25.65	.8278	0.000352			
.906	3.619	3862.	.8253	.9552	.8444	25.76	.8145	0.000371			
.937	3.741	3992.	.8314	.9568	.8501	25.94	.8065	0.000388			
.971	3.878	4138.	.8359	.9577	.8542	26.07	.7950	0.000407			
1.000	3.964	4262.	.8386	.9583	.8566	26.15	.7849	0.000424			
1.033	4.125	4403.	.8424	.9592	.8601	26.26	.7732	0.000444			
1.074	4.304	4592.	.8473	.9604	.8646	26.40	.7649	0.000470			
1.121	4.476	4776.	.8543	.9625	.8728	26.66	.7405	0.000497			
1.165	4.654	4965.	.8597	.9633	.8759	26.76	.7231	0.000525			
1.206	4.816	5139.	.8668	.9650	.8823	26.97	.7067	0.000551			

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Y (CHI)	Y/TWETA	Y-PLUS	TABLE A10. (CONT.) W/ME RHO/RHOF	U/UIE	I-PLUS	TAU/TAU-MAX	V/U
1.253	5.003	5339.	.8711	.9661	27.09	.6872	.0055-2
1.297	5.181	5528.	.8751	.9671	27.20	.6681	.000611
1.339	5.348	5707.	.8840	.9693	27.46	.6497	.000639
1.383	5.520	5891.	.8888	.9705	27.60	.6303	.000660
1.419	5.667	6047.	.8936	.9717	27.74	.6134	.000685
1.466	5.855	6248.	.9003	.9736	27.93	.5913	.000724
1.511	6.032	6437.	.9052	.9744	28.07	.5701	.000759
1.550	6.190	6605.	.9092	.9754	28.18	.5509	.000784
1.592	6.397	6826.	.9142	.9769	28.32	.5250	.000825
1.635	6.579	6967.	.9173	.9777	28.41	.5087	.000849
1.671	6.671	7118.	.9223	.9790	28.55	.4907	.000874
1.724	6.844	7346.	.9286	.9806	28.73	.4635	.000914
1.771	7.072	7546.	.9321	.9815	28.83	.4393	.000948
1.808	7.219	7703.	.9372	.9829	28.98	.4198	.000975
1.854	7.491	7897.	.9412	.9839	29.09	.3944	.001004
1.879	7.503	8036.	.9433	.9845	29.15	.3732	.001027
1.917	7.655	8169.	.9468	.9854	29.25	.3633	.001054
1.960	7.827	8352.	.9540	.9874	29.45	.3409	.001085
2.006	8.010	8547.	.9549	.9874	29.47	.3172	.001117
2.048	8.177	8725.	.9603	.9890	29.63	.2953	.001147
2.082	8.314	8871.	.9637	.9899	29.72	.2781	.001170
2.128	8.496	9066.	.9665	.9907	29.80	.2550	.001201
2.166	8.648	9228.	.9714	.9911	29.84	.2360	.001224
2.202	8.790	9380.	.9751	.9931	29.94	.2185	.001250
2.239	8.937	9537.	.9784	.9940	30.04	.2003	.001274
2.280	9.105	9715.	.9806	.9944	30.13	.1807	.001300
2.308	9.216	9891.	.9818	.9949	30.20	.1677	.001317
2.345	9.363	9994.	.9845	.9954	30.23	.1508	.001330
2.382	9.510	10148.	.9863	.9961	30.31	.1344	.001360
2.418	9.652	10299.	.9879	.9964	30.35	.1190	.001380
2.468	9.855	10516.	.9899	.9971	30.40	.0976	.001409
2.515	10.042	10716.	.9922	.9978	30.46	.0790	.001432
2.555	10.200	10984.	.9927	.9979	30.52	.0640	.001451
2.603	10.392	11089.	.9946	.9984	30.53	.0466	.001473
2.654	10.595	11305.	.9962	.9989	30.59	.0295	.001494
2.692	10.747	11468.	.9964	.9987	30.63	.0175	.001510
2.734	10.914	11646.	.9970	.9991	30.61	.0051	.001524
2.788	11.051	11792.	.9970	.9991	30.65	0.0000	.001533
2.804	11.193	11946.	.9970	.9991	30.65	0.0000	.001533
2.835	11.558	12333.	.9991	.9994	30.70	0.0000	.001533
2.947	11.923	12723.	.9991	.9997	30.71	0.0000	.001533
3.070	12.258	13080.	.9991	.9997	30.71	0.0000	.001533
3.154	12.593	13437.	.9999	.9999	30.73	0.0000	.001533
3.235	12.917	13793.	.9993	.9997	30.72	0.0000	.001533
3.329	13.202	14183.	1.0001	1.0000	30.73	0.0000	.001533
3.404	13.596	14508.	1.0001	1.0001	30.74	0.0000	.001533
3.486	13.914	14849.	1.0003	1.0000	30.74	0.0000	.001533
3.581	14.215	15168.	.9996	.9999	30.73	0.0000	.001533
3.632	14.499	15471.	1.0001	1.0000	30.74	0.0000	.001533
3.698	14.762	15752.	1.0000	1.0000	30.74	0.0000	.001533

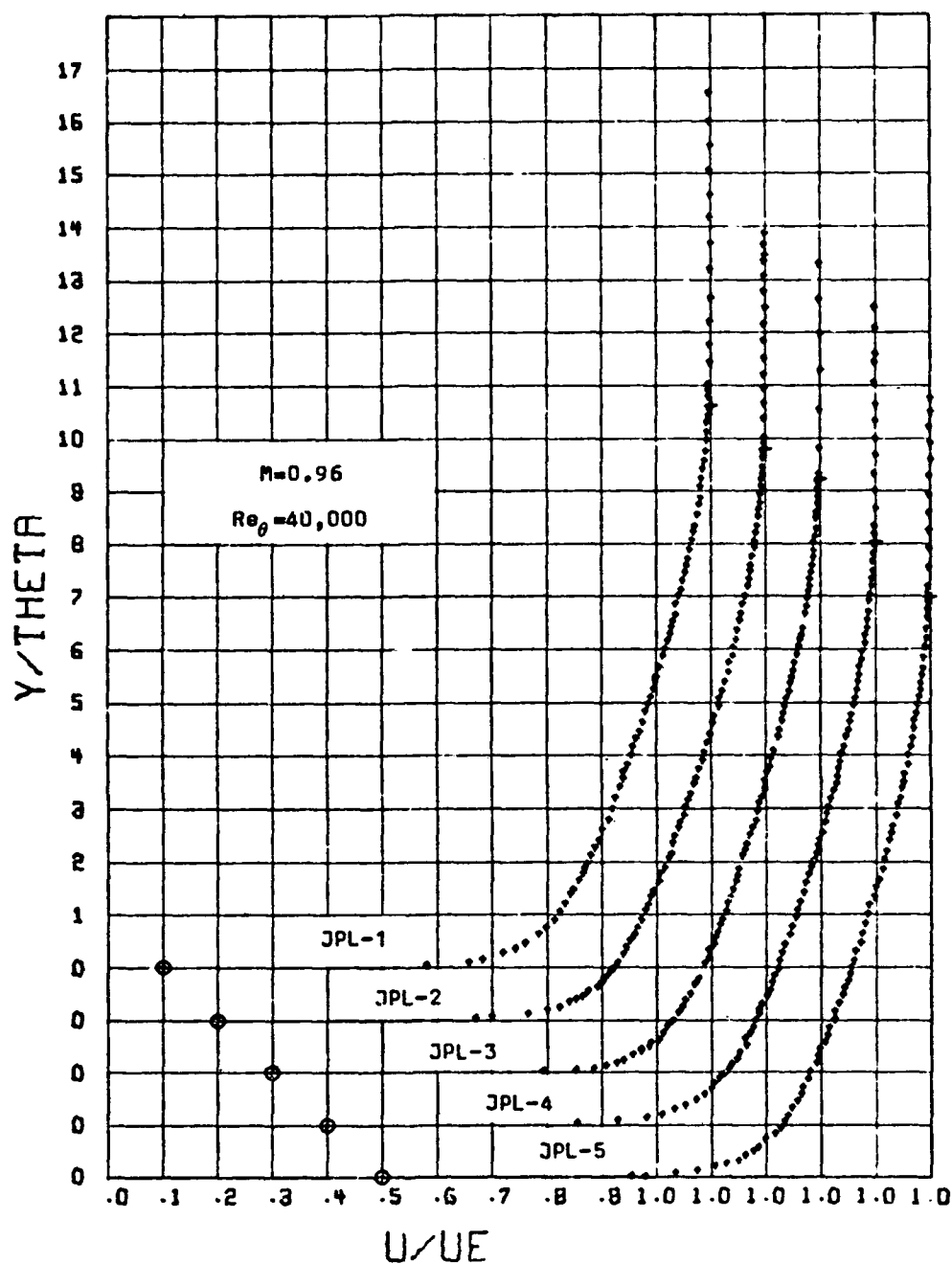


Figure A25. Mean Velocity Profiles.

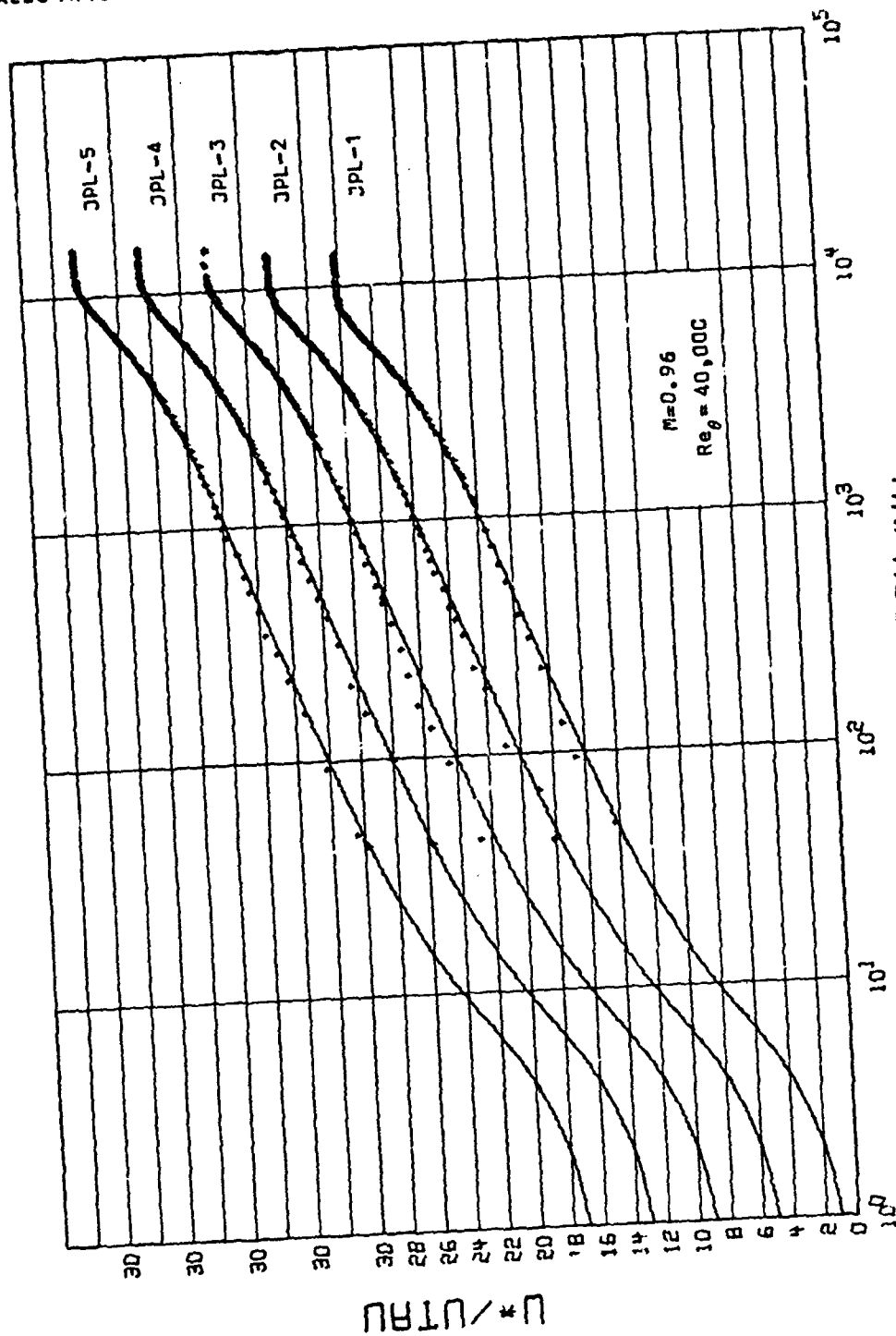
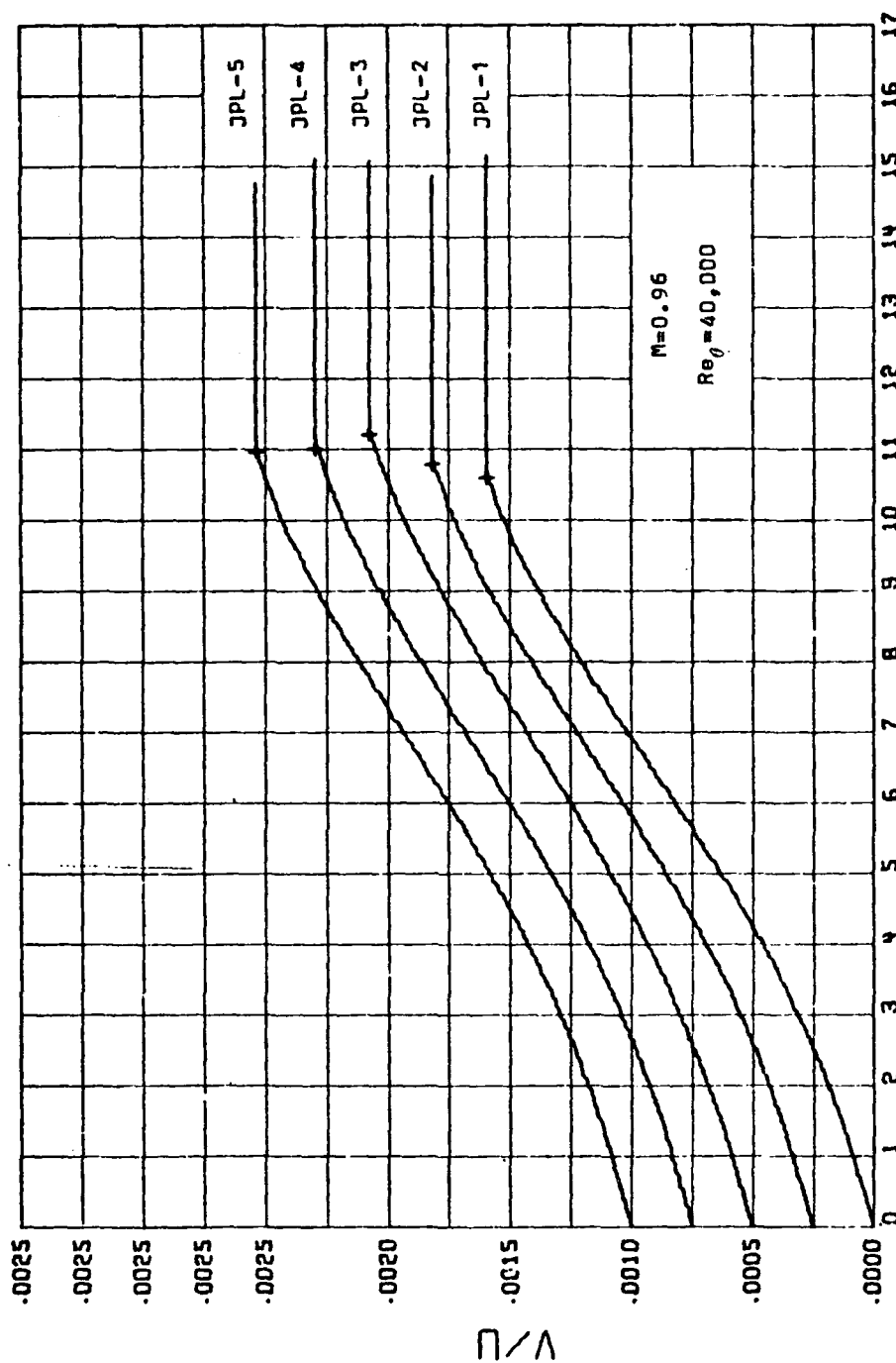


Figure A26. Van Orist Scaled Mean Velocity Profiles.



Y/THETA

Figure A27. Normal Velocity Distribution.

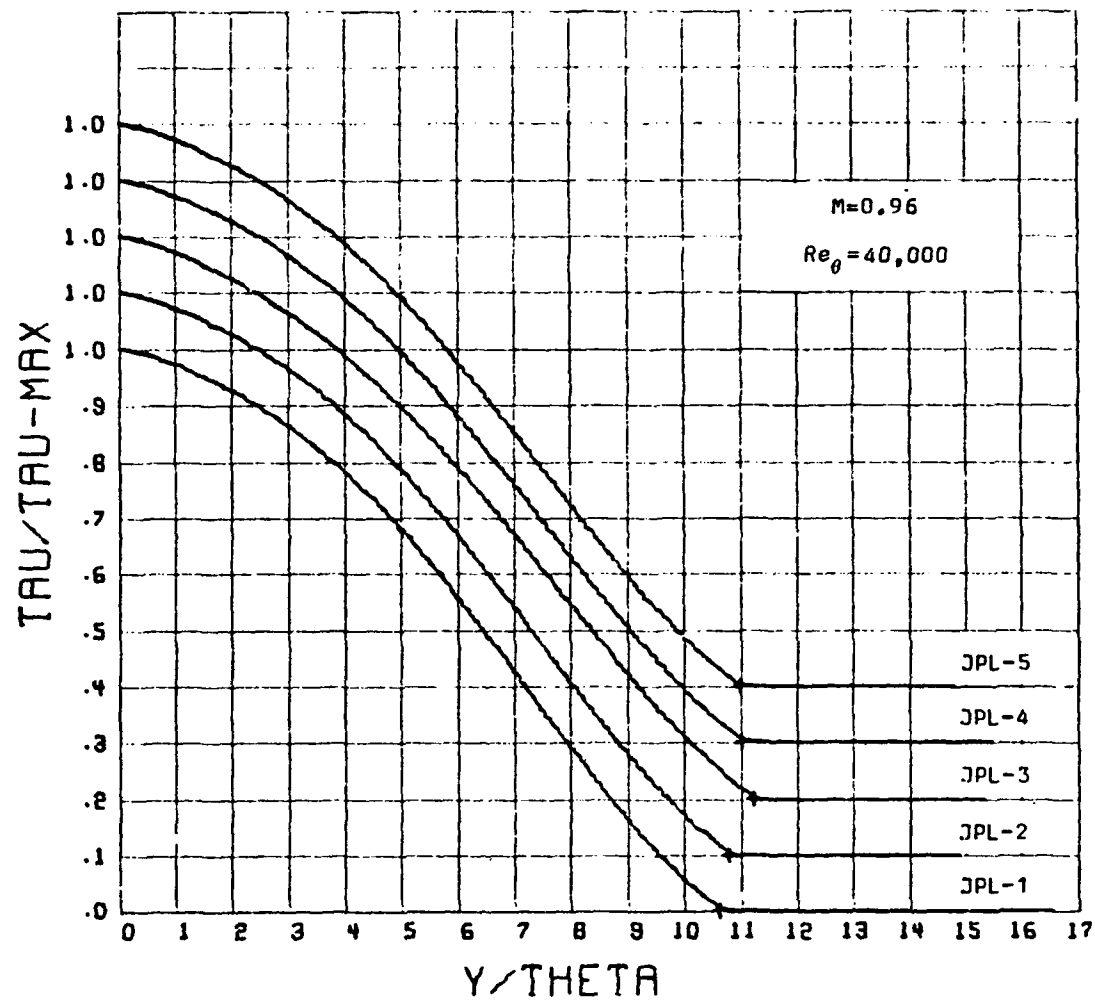


Figure A28. Shear Stress Distribution.

TABLE A11. DATA SUMMARY
PROFILE - JPL-2 - - - PITOT PRESSURE DATAEDGE MACH NO. = 1.3141
X = 26.21 CM
TOTAL PRESSURE = .6691E+05 N/M²
TOTAL TEMPERATURE = 312.53 DEG-K

U = 401.96 M/SEC RE-DELTA-STAR = 39050.		DELTA STAR = .4186 CM RE-THETA = 19780.		THETA = .2121 CM MUWALL = .6931 CM ² /SEC		M = 1.973		DELTA = 2.325R CM	
LEAST SQUARE FIT PARAMETERS UTAU = 14.5261 M/SEC CHISQR = .7536E-05		CF = .002000 YMAX = 2.200 CM		PI = .6503 YMIN = .066 CM					
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOF	U/UE	U-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.765R	0.0000	0.00	1.0000	0.000000	
.010	.047	21.	.3998	.8033	.4460	12.44	1.0000	0.000000	
.017	.083	37.	.4543	.8142	.5035	14.57	.9994	.000203	
.034	.161	71.	.5052	.8254	.5560	15.37	.9980	.000011	
.043	.203	90.	.5363	.8332	.5875	16.4R	.9971	.000015	
.066	.311	13R.	.5679	.8414	.6192	17.40	.9947	.000025	
.100	.473	210.	.5932	.8442	.6440	18.12	.9904	.000040	
.119	.562	250.	.6096	.8529	.6601	18.59	.9879	.000049	
.149	.700	311.	.6312	.8591	.6810	19.20	.9837	.000063	
.171	.80R	359.	.6406	.8619	.6900	19.46	.9802	.000074	
.213	1.005	447.	.6571	.8669	.7057	19.92	.9733	.000094	
.243	1.155	513.	.6694	.870R	.7173	20.27	.9679	.000110	
.285	1.347	59R.	.6840	.8754	.7311	20.67	.9602	.000131	
.323	1.524	67R.	.6956	.8791	.7418	20.99	.9527	.000152	
.370	1.74R	777.	.7071	.8829	.7525	21.31	.9477	.00017R	
.405	1.914	851.	.7207	.8875	.7650	21.68	.9344	.000149	
.430	2.071	920.	.7232	.8883	.7673	21.75	.926R	.00021R	
.466	2.293	1019.	.7343	.8921	.7774	22.05	.9149	.00024R	
.523	2.466	1096.	.7460	.8961	.7880	22.37	.9050	.000272	
.561	2.646	1176.	.7534	.8987	.7947	22.57	.8942	.000297	
.593	2.794	1243.	.7612	.9015	.8017	22.7R	.884R	.000319	
.622	2.933	1304.	.7709	.9050	.8103	23.04	.875R	.000340	
.67R	3.197	1421.	.7805	.90R5	.81R9	23.29	.8575	.000342	
.715	3.371	149R.	.7861	.9105	.823R	23.44	.844R	.000410	
.750	3.53R	1573.	.7950	.913R	.8316	23.48	.8319	.00043R	
.74R	3.71R	1652.	.8049	.9175	.8403	23.94	.8175	.000470	
.82R	3.904	1725.	.8094	.9192	.8442	24.06	.8019	.000503	
.871	4.107	1825.	.8176	.9224	.8513	24.28	.7841	.000541	
.901	4.251	18R9.	.8231	.9245	.85A1	24.42	.7710	.000559	
.940	4.474	1972.	.8314	.927R	.8633	24.44	.7534	.000605	
.980	4.622	2054.	.8389	.9304	.8694	24.83	.7350	.000643	
1.01R	4.802	2134.	.8473	.9339	.874R	25.05	.7170	.000679	
1.059	4.993	2219.	.8510	.9354	.8799	25.15	.6969	.000719	
1.089	5.137	2283.	.8563	.9375	.8844	25.2R	.6814	.000750	
1.121	5.287	2350.	.8620	.939R	.8892	25.33	.6646	.000783	
1.154	5.440	2427.	.867R	.9422	.8941	25.4R	.6451	.000821	
1.190	5.65R	2515.	.8752	.9452	.9002	25.77	.6271	.000865	
1.229	5.794	2576.	.8816	.947R	.9055	26.93	.6057	.000897	
1.250	5.930	2640.	.8853	.9494	.9086	26.03	.5883	.000920	
1.285	6.107	2714.	.8910	.9517	.9133	26.17	.5677	.000949	
1.325	6.251	277R.	.8959	.953R	.9173	26.30	.5497	.001002	

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Y (CM)	Y/THETA	Y-PLUS	TABLE ALL. M/ME	(CONT.) RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/VI
1.363	6.430	2.858	.9000	.9555	.9207	26.40	.5269	.001044
1.404	6.622	2943	.9068	.9584	.9263	26.58	.5022	.001190
1.447	6.824	3036	.9135	.9612	.9318	26.74	.4757	.001138
1.493	7.041	3130	.9182	.9632	.9355	26.86	.4472	.001149
1.524	7.197	3190	.9256	.9666	.9415	27.08	.4265	.001226
1.562	7.364	3273	.9287	.9682	.9448	27.15	.4042	.001264
1.600	7.544	3353	.9344	.9703	.9476	27.27	.3801	.001308
1.637	7.718	3430	.9381	.9719	.9515	27.36	.3569	.001349
1.674	7.867	3497	.9435	.9743	.9558	27.49	.3369	.001386
1.709	8.059	3582	.9496	.9770	.9607	27.65	.3114	.001428
1.742	8.263	3673	.9539	.9789	.9641	27.75	.2845	.001474
1.773	8.454	3758	.9578	.9807	.9672	27.85	.2597	.001516
1.803	8.645	3843	.9643	.9834	.9723	28.01	.2351	.001558
1.879	8.861	3938	.9677	.9851	.9750	28.09	.2075	.001605
1.922	9.065	4028	.9706	.9864	.9772	28.16	.1820	.001646
1.973	9.304	4136	.9756	.9887	.9811	28.29	.1545	.001593
2.017	9.574	4213	.9794	.9904	.9841	28.38	.1346	.001726
2.067	9.852	4290	.9840	.9924	.9877	28.49	.1154	.001758
2.108	10.091	4377	.9852	.9931	.9886	28.52	.0900	.001799
2.131	10.047	4466	.9884	.9941	.9910	28.60	.0744	.001825
2.160	10.227	4546	.9896	.9951	.9920	28.63	.0571	.001853
2.200	10.376	4612	.9916	.9961	.9936	28.68	.0434	.001875
2.240	10.562	4695	.9928	.9966	.9944	28.70	.0277	.001901
2.274	10.664	4740	.9930	.9967	.9956	28.71	.0195	.001914
2.312	10.855	4825	.9938	.9971	.9962	28.73	.0051	.001938
2.334	11.005	4892	.9962	.9982	.9971	28.79	0.0000	.001944
2.366	11.149	4956	.9969	.9985	.9976	28.81	0.0000	.001944
2.433	11.472	5099	.9988	.9994	.9991	28.85	0.0000	.001946
2.513	11.849	5267	.9997	.9998	.9998	28.87	0.0000	.001946
2.598	12.278	5440	.9998	.9999	.9991	28.85	0.0000	.001946
2.672	12.598	5600	.9997	.9993	.9980	28.85	0.0000	.001946
2.759	13.011	5783	.9996	.9994	.9987	28.87	0.0000	.001946
2.854	13.460	5983	1.0005	1.0002	1.0004	28.89	0.0000	.001946
2.936	13.843	6153	.9996	.9998	.9987	28.87	0.0000	.001946
3.017	14.226	6376	1.0007	1.0003	1.0005	28.90	0.0000	.001946
3.103	14.634	6505	.9997	.9999	.9998	28.87	0.0000	.001946
3.143	15.011	6672	1.0007	1.0003	1.0005	28.90	0.0000	.001946
3.249	15.322	6811	.9994	.9997	.9995	28.87	0.0000	.001946
3.331	15.705	6941	.9992	.9996	.9994	28.86	0.0000	.001946
3.415	16.101	7157	1.0001	1.0000	1.0001	28.88	0.0000	.001946
3.503	16.520	7363	1.0001	1.0000	1.0001	28.88	0.0000	.001946

TABLE A11. (CONT.)

PROFILE - JPL-3 - - - PITOT PRESSURE DATA
 EDGE MACH NO. = 1.3215 TOTAL PRESSURE = .6651E+05 N/M²
 X = -7.62 CM TOTAL TEMPERATURE = 310.59 DEG-K

U_E = 402.38 M/SEC DELTA STAR = .4474 CM H = 1.978
 RE-DELTA-STAR = .43290. RE-THETA = 21880. MUWALL = .6952 CM²/SEC

LEAST SQUARE FIT PARAMETERS
 UTAU = 14.4985 M/SEC CF = .001983 DELTA = 2.5047 CM
 CHISQR = .5243E-05 YMAX = 2.358 CM

PI = .6356
 YMIN = .095 CM

Y (CM)	Y/THETA	Y-PLUS	M/E	RHO/RHOF	U/UE	U-PLUS	TAU/TAU-MAX	V/VU
0.000	0.000	0.	0.0000	.7638	0.0000	0.00	1.0000	0.000000
.010	.044	21.	.4047	.8025	.4518	12.64	1.0000	0.000000
.031	.140	64.	.5071	.8245	.5584	15.69	.9985	.000009
.053	.235	111.	.5388	.8374	.5805	16.62	.9965	.000017
.066	.291	137.	.5610	.8382	.6128	17.26	.9951	.000023
.077	.326	158.	.5759	.8458	.6960	13.87	.9947	.000025
.076	.336	158.	.5759	.8421	.6275	17.49	.9941	.000027
.093	.421	198.	.5914	.8464	.6428	18.14	.9919	.000035
.113	.499	235.	.6060	.8506	.6571	18.56	.9897	.000042
.134	.595	280.	.6180	.8540	.6687	18.90	.9870	.000052
.141	.713	336.	.6332	.8585	.6833	19.33	.9833	.000063
.154	.814	384.	.6385	.8601	.6884	19.48	.9801	.000073
.174	.887	418.	.6521	.8643	.7014	19.86	.9776	.000081
.229	1.016	479.	.6621	.8674	.7110	20.14	.9731	.000094
.275	1.218	574.	.6795	.8729	.7273	20.63	.9656	.000115
.312	1.341	651.	.6912	.8767	.7382	20.95	.9591	.000133
.330	1.504	709.	.6948	.8785	.7434	21.11	.9539	.000147
.373	1.650	778.	.7083	.8823	.7540	21.42	.9476	.000163
.415	1.835	866.	.7195	.8861	.7644	21.73	.9391	.000185
.443	1.959	924.	.7215	.8868	.7662	21.79	.9331	.000200
.470	2.122	1001.	.7315	.8902	.7753	22.06	.9249	.000220
.514	2.290	1080.	.7397	.8931	.7878	22.28	.9160	.000242
.549	2.430	1145.	.7470	.8955	.7893	22.48	.9082	.000261
.591	2.616	1234.	.7580	.8995	.7992	22.78	.8974	.000286
.631	2.790	1316.	.7636	.9015	.8042	22.93	.8867	.000311
.669	2.953	1395.	.7707	.9041	.8105	23.12	.8759	.000336
.698	3.087	1456.	.7753	.9058	.8146	23.24	.8672	.000355
.726	3.211	1515.	.7793	.9073	.8182	23.35	.8587	.000375
.763	3.374	1591.	.7885	.9106	.8263	23.59	.8470	.000400
.803	3.553	1674.	.7940	.9127	.8310	23.74	.8335	.000430
.835	3.694	1742.	.8029	.9161	.8388	23.98	.8225	.000454
.872	3.856	1819.	.8052	.9169	.8408	24.04	.8093	.000482
.908	4.014	1893.	.8132	.9200	.8478	24.25	.7961	.000510
.958	4.278	1999.	.8212	.9231	.8548	24.46	.7764	.000551
.998	4.412	2081.	.8288	.9260	.8612	24.66	.7605	.000584
1.031	4.556	2150.	.8330	.9277	.8649	24.77	.7467	.000612
1.076	4.760	2246.	.8430	.9314	.8734	25.03	.7289	.000652
1.113	4.923	2322.	.8488	.9340	.8783	25.18	.7105	.000685
1.150	5.034	2399.	.8544	.9367	.8830	25.32	.6935	.000714
1.192	5.271	2487.	.8617	.9392	.8891	25.51	.6737	.000757
1.238	5.473	2582.	.8683	.9419	.8946	25.68	.6514	.000800

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TABLE A11. (CONT.)
H/NE RHO/RHNE

Y (CM)	Y/THETA	Y-PLUS	H/NE	RHO/RHNE	U/U _E	U-PLUS	TAU/TAU-MAX	V/U
1.282	5.670	2675.	.8746	.9445	.8999	25.85	.6292	.00843
1.336	5.906	2786.	.8839	.9483	.9076	26.08	.6017	.009895
1.371	6.063	2860.	.8870	.9496	.9102	26.16	.5830	.009930
1.407	6.220	2934.	.8939	.9525	.9159	26.34	.5639	.009966
1.449	6.405	3022.	.9004	.9553	.9212	26.50	.5411	.001008
1.497	6.619	3122.	.9046	.9571	.9247	26.61	.5143	.001057
1.541	6.815	3215.	.9128	.9606	.9314	26.82	.4894	.001102
1.579	6.984	3280.	.9179	.9624	.9354	26.95	.4677	.001141
1.612	7.130	3363.	.9222	.9647	.9389	27.06	.4486	.901175
1.643	7.287	3437.	.9272	.9668	.9429	27.18	.4284	.001211
1.697	7.506	3541.	.9312	.9684	.9462	27.28	.3998	.001262
1.724	7.624	3596.	.9349	.9702	.9491	27.37	.3844	.001249
1.742	7.732	3633.	.9393	.9722	.9526	27.48	.3741	.001307
1.775	7.848	3702.	.9411	.9750	.9541	27.53	.3550	.001340
1.812	8.011	3779.	.9461	.9752	.9581	27.65	.3333	.001377
1.838	8.129	3835.	.9498	.9769	.9609	27.74	.3185	.001403
1.874	8.266	3909.	.9521	.9779	.9628	27.80	.2992	.001437
1.902	8.410	3967.	.9560	.9797	.9659	27.90	.2823	.001464
1.940	8.578	4047.	.9600	.9815	.9690	28.00	.2610	.001501
1.971	8.713	4110.	.9644	.9834	.9724	28.11	.2440	.001529
2.014	8.904	4200.	.9673	.9868	.9747	28.18	.2205	.001569
2.052	9.072	4280.	.9687	.9854	.9758	28.21	.2031	.001603
2.094	9.257	4367.	.9750	.9893	.9807	28.37	.1782	.001639
2.128	9.409	4439.	.9765	.9920	.9819	28.40	.1607	.001668
2.166	9.577	4518.	.9798	.9904	.9845	28.49	.1418	.001659
2.207	9.757	4603.	.9825	.9918	.9865	28.55	.1223	.001731
2.244	9.920	4680.	.9853	.9931	.9887	28.62	.1050	.001750
2.268	10.077	4730.	.9876	.9942	.9905	28.68	.0945	.001777
2.321	10.262	4841.	.9899	.9952	.9923	28.73	.0717	.001814
2.358	10.425	4918.	.9910	.9958	.9931	28.76	.0549	.001828
2.387	10.554	4978.	.9914	.9959	.9934	28.77	.0453	.001856
2.425	10.723	5058.	.9929	.9967	.9946	28.81	.0320	.001878
2.470	10.919	5151.	.9944	.9974	.9957	28.84	.0171	.001902
2.504	11.071	5223.	.9961	.9981	.9970	28.88	.0045	.001919
2.560	11.228	5297.	.9959	.9991	.9969	28.86	0.0000	.001930
2.593	11.454	5408.	.9980	.9990	.9984	28.93	0.0000	.001930
2.662	11.784	5559.	.9996	.9998	.9997	28.97	0.0000	.001930
2.750	12.160	5736.	.9998	.9999	.9998	28.97	0.0000	.001930
2.832	12.519	5906.	1.0008	1.0003	1.0006	29.00	0.0000	.001930
2.921	12.912	6091.	1.0000	1.0000	1.0000	28.98	0.0000	.001930
3.012	13.317	6282.	1.0004	1.0002	1.0003	28.99	0.0000	.001930
3.105	13.726	6475.	1.0004	1.0002	1.0003	28.99	0.0000	.001930
3.191	14.063	6634.	1.0002	1.0001	1.0001	28.98	0.0000	.001930
3.260	14.611	6784.	.9994	.9997	.9994	28.96	0.0000	.001930
3.346	14.838	7000.	1.0005	1.0002	1.0004	28.98	0.0000	.001930
3.431	15.169	7156.	1.0000	1.0000	1.0000	28.98	0.0000	.001930
3.524	15.579	7345.	1.0011	1.0005	1.0008	29.00	0.0000	.001930
3.604	15.933	7516.	.9998	.9999	.9994	28.97	0.0000	.001930

TABLE A11. (CONT.)
PROFILE - JPL-4 - - PITOT PRESSURE DATA

EDGE MACH NO. = 1.3197		TOTAL PRESSURE = .6665E+05 N/M ²		TOTAL TEMPERATURE = 310.59 DEG-K		M = 1.970		CF = .001867	
X = 0.00 CM		DELTA STAR = .4601 CM		THETA = .2335 CM		N/WALL = .4862 CM**2/SEC		PI = .6090	
RE-DELTA-STAR = 43170.		RE-THETA = 21900.		CF = .001983		YMIN = .082 CM		DELTA = 2.6199 CM	
LEAST SQUARE FIT PARAMETERS		UTAU = 14.4789 M/SEC		YMAX = 2.470 CM					
CHISQR = .1029E-04									
Y (CM)	Y/THETA	Y-PLUS	M/E	RHO/RHOE	U/E	U-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.7643	0.0000	0.00	1.0000	0.000000	
.010	.043	21.	.4022	.8024	.4490	12.56	1.0000	0.000000	
.017	.076	7.	.4190	.8057	.6668	13.07	.9995	0.000003	
.035	.152	75.	.5119	.8261	.5632	15.84	.9981	.000010	
.043	.184	91.	.5362	.8321	.5878	16.55	.9974	.000013	
.049	.261	128.	.5487	.8353	.6203	16.91	.9957	.000020	
.047	.284	142.	.5685	.8405	.6201	17.48	.9951	.000023	
.042	.353	174.	.5821	.8442	.6336	17.48	.9935	.000029	
.036	.413	203.	.5936	.8474	.6449	18.21	.9919	.000034	
.111	.478	235.	.6057	.8508	.6567	18.55	.9901	.000041	
.139	.598	294.	.6231	.8558	.6736	19.05	.9886	.000052	
.167	.685	337.	.6369	.8599	.6868	19.44	.9839	.000061	
.180	.772	380.	.6451	.8624	.6944	19.67	.9811	.000059	
.205	.881	434.	.6556	.8656	.7047	19.96	.9774	.000060	
.274	.967	474.	.6627	.8678	.7114	20.16	.9746	.000049	
.241	1.033	509.	.6707	.8703	.7189	20.39	.9721	.000096	
.274	1.174	578.	.6796	.8732	.7273	20.63	.9684	.000111	
.307	1.316	648.	.6893	.8763	.7363	20.90	.9612	.000124	
.328	1.408	694.	.6922	.8772	.7391	20.98	.9575	.000136	
.343	1.512	744.	.7038	.8810	.7408	21.30	.9531	.000148	
.374	1.653	814.	.7114	.8834	.7548	21.51	.9469	.000164	
.425	1.822	897.	.722.	.8873	.7669	21.81	.9392	.000183	
.453	1.941	956.	.7249	.8881	.7692	21.88	.9334	.000198	
.472	2.066	1018.	.7303	.8900	.7741	22.03	.9272	.000213	
.518	2.219	1093.	.7388	.8929	.7819	22.26	.9193	.000232	
.546	2.338	1152.	.7432	.8945	.7858	22.39	.9129	.000248	
.574	2.453	1211.	.7503	.8970	.7892	22.57	.9042	.000264	
.604	2.588	1276.	.7573	.8995	.7985	22.76	.8987	.000281	
.637	2.730	1345.	.7621	.9012	.8078	22.89	.8901	.000301	
.673	2.882	1420.	.7681	.9033	.8081	23.05	.8807	.000323	
.713	3.056	1506.	.7751	.9059	.8144	23.24	.8693	.000348	
.746	3.195	1575.	.7802	.9077	.8188	23.38	.8596	.000370	
.786	3.355	1658.	.7896	.9112	.8271	23.63	.8478	.000396	
.829	3.551	1749.	.7973	.9141	.8339	23.83	.8341	.000426	
.874	3.676	1811.	.8039	.9166	.8397	24.01	.8245	.000444	
.854	3.830	1891.	.8074	.9180	.8427	24.10	.8114	.000474	
.912	3.932	1966.	.8103	.9193	.8468	24.19	.7991	.000500	
.945	4.133	2036.	.8183	.9221	.8521	24.39	.7871	.000524	
.979	4.280	2108.	.8237	.9247	.8568	24.53	.7742	.000552	
1.033	4.449	2192.	.8317	.9271	.8632	24.73	.7590	.000583	
1.074	4.644	2288.	.8378	.9297	.8689	24.90	.7406	.000621	

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Y (CM)	Y/THETA	Y-PLUS	TABLE ALL. W/NE	(CONT.) RHO/RHNE	U/Ue	U-PLUS	TAU/TAU-MAX	V/U
1.113	4.769	2350.	.8428	.9317	.8731	25.03	.7286	.000645
1.153	4.938	2433.	.8460	.9330	.8759	25.11	.7119	.000678
1.192	5.107	2516.	.8530	.9358	.8818	25.30	.6947	.000712
1.219	5.221	2572.	.8588	.9381	.8866	25.44	.6827	.000735
1.247	5.341	2631.	.8633	.9399	.8904	25.56	.6700	.000760
1.270	5.525	2722.	.8685	.9421	.8948	25.70	.6499	.000749
1.333	5.710	2913.	.8745	.9446	.8998	25.85	.6291	.000839
1.338	5.819	2967.	.8779	.9459	.9026	25.94	.6170	.000862
1.394	5.971	2942.	.8841	.9485	.9077	26.10	.5994	.000895
1.436	6.151	3030.	.8876	.9500	.9106	26.18	.5783	.000934
1.473	6.309	3108.	.8945	.9529	.9163	26.36	.5594	.000969
1.506	6.450	3178.	.8988	.9547	.9199	26.47	.5423	.001001
1.549	6.635	3269.	.9056	.9576	.9255	26.64	.5195	.001043
1.602	6.863	3381.	.9107	.9598	.9296	26.77	.4910	.001094
1.631	6.989	3443.	.9166	.9623	.9344	26.92	.4752	.001123
1.714	7.262	3617.	.9287	.9676	.9441	27.23	.4299	.001203
1.671	7.157	3526.	.9204	.9640	.9374	27.02	.4268	.001209
1.751	7.500	3695.	.9300	.9681	.9451	27.26	.4099	.001238
1.795	7.690	3789.	.9346	.9702	.9489	27.37	.3854	.001281
1.841	7.884	3885.	.9405	.9728	.9536	27.52	.3602	.001325
1.875	8.033	3957.	.9454	.9750	.9575	27.64	.3413	.001358
1.921	8.229	4054.	.9498	.9769	.9609	27.75	.3162	.001401
1.962	8.403	4140.	.9563	.9798	.9661	27.91	.2940	.001430
2.022	8.577	4225.	.9590	.9816	.9682	27.98	.2721	.001476
2.039	8.734	4303.	.9642	.9834	.9723	28.11	.2521	.001509
2.042	8.819	4394.	.9661	.9842	.9737	28.15	.2297	.001547
2.119	9.077	4475.	.9708	.9864	.9775	28.27	.2106	.001579
2.153	9.224	4544.	.9717	.9868	.9782	28.29	.1931	.001608
2.194	9.398	4630.	.9763	.9889	.9817	28.41	.1729	.001647
2.240	9.594	4727.	.9807	.9910	.9851	28.51	.1503	.001679
2.275	9.746	4802.	.9826	.9918	.9866	28.56	.1339	.001706
2.315	9.915	4885.	.9853	.9931	.9877	28.63	.1160	.001736
2.357	10.094	4973.	.9860	.9934	.9882	28.64	.0975	.001766
2.397	10.267	5048.	.9894	.9950	.9897	28.73	.0825	.001796
2.426	10.393	5120.	.9918	.9961	.9919	28.79	.0685	.001833
2.470	10.574	5212.	.9921	.9963	.9939	28.79	.0518	.001863
2.508	10.741	5292.	.9940	.9971	.9954	28.84	.0379	.001893
2.534	10.854	5348.	.9964	.9983	.9972	28.90	.0284	.001923
2.575	11.030	5434.	.9959	.9980	.9968	28.88	.0153	.001949
2.607	11.165	5501.	.9962	.9982	.9971	28.89	.0050	.001974
2.641	11.313	5573.	.9975	.9988	.9981	28.93	0.0000	.001993
2.667	11.421	5627.	.9972	.9986	.9978	28.92	0.0000	.001923
2.763	11.748	5788.	.9994	.9997	.9995	28.97	0.0000	.001923
2.795	11.971	5898.	.9999	.9999	.9999	28.98	0.0000	.001923
2.875	12.313	6064.	1.0001	1.0000	1.0001	28.99	0.0000	.001923
2.954	12.651	6233.	1.0001	1.0000	1.0011	28.99	0.0000	.001923
3.054	13.090	6444.	1.0005	1.0002	1.0004	29.00	0.0000	.001923
3.150	13.494	6648.	1.0005	1.0002	1.0004	29.00	0.0000	.001923
3.253	13.978	6884.	1.0003	1.0001	1.0002	28.99	0.0000	.001923
3.344	14.407	7098.	1.0007	1.0003	1.0005	29.00	0.0000	.001923
3.484	14.924	7353.	.9998	.9999	.9998	28.98	0.0000	.001923
3.561	15.250	7513.	.9999	.9998	.9999	28.98	0.0000	.001923
3.596	15.789	7779.	1.0001	1.0000	1.0001	28.99	0.0000	.001923

TABLE A11. (CONT.)
PROFILE - JOL-5 - - - PITOT PRESSURE DATAEDGE MACH NO. = 1.3151 TOTAL PRESSURE = .6678E-05 N/m²
X = 7.62 CM TOTAL TEMPERATURE = 304.28 DEG-K

UE = 395.85 M/SEC WE-DELTA-STAR = 47510.				DELTA STAR = .4777 CM RE-THETA = 24190.				THETA = .2433 CM MUMALL = .6598 CM/SEC				M = 1.963					
LEAST SQUARE FIT PARAMETERS UTIME = 14.1076 M/SEC CMICOR = .9072E-05				CF = .001953 YMAX = 2.571 CM				PI = .4205 YMIN = .092 CM				DELTA = 2.7131 CM					
Y (CM)	Y/THETA	Y-PLUS	M/NE	RNO/RMPE	U/UE	U-PLUS	TAU/TAU-MAX	V/U	Y (CM)	Y/THETA	Y-PLUS	M/NE	RNO/RMPE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
3.040	0.000	0.	0.0000	.7656	0.0000	0.00	1.0000	0.000000	3.040	0.000	0.	0.0000	.7656	0.0000	0.00	1.0000	0.000000
3.10	.041	21.	.3934	.8024	.4428	12.47	1.0000	0.000000	3.10	.041	21.	.3934	.8024	.4428	12.47	1.0000	0.000000
3.27	.093	49.	.4758	.8186	.5258	14.46	.8992	0.000004	3.27	.093	49.	.4758	.8186	.5258	14.46	.8992	0.000004
3.31	.130	68.	.5081	.8261	.5591	15.42	.8685	0.000018	3.31	.130	68.	.5081	.8261	.5591	15.42	.8685	0.000018
3.57	.204	109.	.5303	.8315	.5914	16.49	.8645	0.000017	3.57	.204	109.	.5303	.8315	.5914	16.49	.8645	0.000017
3.54	.224	117.	.5473	.8358	.5997	16.97	.8649	0.000024	3.54	.224	117.	.5473	.8358	.5997	16.97	.8649	0.000024
3.72	.297	155.	.5667	.8409	.6190	17.54	.8674	0.000031	3.72	.297	155.	.5667	.8409	.6190	17.54	.8674	0.000031
3.82	.341	199.	.5845	.8462	.6376	18.11	.8674	0.000042	3.82	.341	199.	.5845	.8462	.6376	18.11	.8674	0.000042
3.90	.405	249.	.6113	.8532	.6619	18.83	.8696	0.000047	3.90	.405	249.	.6113	.8532	.6619	18.83	.8696	0.000047
3.97	.445	284.	.6267	.8559	.6711	19.19	.8781	0.000055	3.97	.445	284.	.6267	.8559	.6711	19.19	.8781	0.000055
3.94	.431	330.	.6267	.8574	.6767	19.27	.8854	0.000063	3.94	.431	330.	.6267	.8574	.6767	19.27	.8854	0.000063
3.94	.431	371.	.6369	.8607	.6865	19.56	.8829	0.000069	3.94	.431	371.	.6369	.8607	.6865	19.56	.8829	0.000069
3.94	.431	401.	.6459	.8634	.6951	19.81	.8810	0.000076	3.94	.431	401.	.6459	.8634	.6951	19.81	.8810	0.000076
3.94	.431	439.	.6517	.8659	.7007	19.94	.8786	0.000080	3.94	.431	439.	.6517	.8659	.7007	19.94	.8786	0.000080
3.94	.431	508.	.6622	.8690	.7125	20.33	.8740	0.000082	3.94	.431	508.	.6622	.8690	.7125	20.33	.8740	0.000082
3.94	.431	557.	.6725	.8714	.7203	20.54	.8706	0.000084	3.94	.431	557.	.6725	.8714	.7203	20.54	.8706	0.000084
3.94	.431	631.	.6813	.8744	.7284	20.81	.8652	0.000084	3.94	.431	631.	.6813	.8744	.7284	20.81	.8652	0.000084
3.94	.431	675.	.6870	.8762	.7339	20.97	.8619	0.000083	3.94	.431	675.	.6870	.8762	.7339	20.97	.8619	0.000083
3.94	.431	729.	.6948	.8764	.7431	21.24	.8576	0.000084	3.94	.431	729.	.6948	.8764	.7431	21.24	.8576	0.000084
3.94	.431	827.	.7058	.8823	.7514	21.49	.8500	0.000084	3.94	.431	827.	.7058	.8823	.7514	21.49	.8500	0.000084
3.94	.431	907.	.7131	.8848	.7591	21.69	.8476	0.000084	3.94	.431	907.	.7131	.8848	.7591	21.69	.8476	0.000084
3.94	.431	951.	.7176	.8843	.7623	21.82	.8347	0.000082	3.94	.431	951.	.7176	.8843	.7623	21.82	.8347	0.000082
3.94	.431	1054.	.7339	.8915	.7643	22.24	.8203	0.000076	3.94	.431	1054.	.7339	.8915	.7643	22.24	.8203	0.000076
3.94	.431	1154.	.7391	.8934	.7619	22.41	.8194	0.000071	3.94	.431	1154.	.7391	.8934	.7619	22.41	.8194	0.000071
3.94	.431	1257.	.7447	.8963	.7617	22.67	.8143	0.000065	3.94	.431	1257.	.7447	.8963	.7617	22.67	.8143	0.000065
3.94	.431	1360.	.7452	.8993	.7617	22.95	.8087	0.000058	3.94	.431	1360.	.7452	.8993	.7617	22.95	.8087	0.000058
3.94	.431	1462.	.7462	.9024	.7617	23.09	.8068	0.000050	3.94	.431	1462.	.7462	.9024	.7617	23.09	.8068	0.000050
3.94	.431	1562.	.7462	.9049	.7617	23.27	.8074	0.000042	3.94	.431	1562.	.7462	.9049	.7617	23.27	.8074	0.000042
3.94	.431	1662.	.7462	.9078	.7617	23.44	.8074	0.000034	3.94	.431	1662.	.7462	.9078	.7617	23.44	.8074	0.000034
3.94	.431	1762.	.7462	.9090	.7617	23.58	.8074	0.000026	3.94	.431	1762.	.7462	.9090	.7617	23.58	.8074	0.000026
3.94	.431	1862.	.7462	.9111	.7617	23.73	.8074	0.000018	3.94	.431	1862.	.7462	.9111	.7617	23.73	.8074	0.000018
3.94	.431	1962.	.7462	.9142	.7617	23.84	.8074	0.000010	3.94	.431	1962.	.7462	.9142	.7617	23.84	.8074	0.000010
3.94	.431	2062.	.7462	.9166	.7617	23.91	.8074	0.000002	3.94	.431	2062.	.7462	.9166	.7617	23.91	.8074	0.000002
3.94	.431	2162.	.7462	.9192	.7617	24.01	.8074	0.000000	3.94	.431	2162.	.7462	.9192	.7617	24.01	.8074	0.000000
3.94	.431	2262.	.7462	.9216	.7617	24.11	.8074	0.000000	3.94	.431	2262.	.7462	.9216	.7617	24.11	.8074	0.000000
3.94	.431	2362.	.7462	.9244	.7617	24.24	.8074	0.000000	3.94	.431	2362.	.7462	.9244	.7617	24.24	.8074	0.000000
3.94	.431	2462.	.7462	.9264	.7617	24.34	.8074	0.000000	3.94	.431	2462.	.7462	.9264	.7617	24.34	.8074	0.000000
3.94	.431	2562.	.7462	.9284	.7617	24.44	.8074	0.000000	3.94	.431	2562.	.7462	.9284	.7617	24.44	.8074	0.000000
3.94	.431	2662.	.7462	.9304	.7617	24.54	.8074	0.000000	3.94	.431	2662.	.7462	.9304	.7617	24.54	.8074	0.000000
3.94	.431	2762.	.7462	.9324	.7617	24.64	.8074	0.000000	3.94	.431	2762.	.7462	.9324	.7617	24.64	.8074	0.000000
3.94	.431	2862.	.7462	.9344	.7617	24.74	.8074	0.000000	3.94	.431	2862.	.7462	.9344	.7617	24.74	.8074	0.000000
3.94	.431	2962.	.7462	.9364	.7617	24.84	.8074	0.000000	3.94	.431	2962.	.7462	.9364	.7617	24.84	.8074	0.000000
3.94	.431	3062.	.7462	.9384	.7617	24.94	.8074	0.000000	3.94	.431	3062.	.7462	.9384	.7617	24.94	.8074	0.000000
3.94	.431	3162.	.7462	.9404	.7617	25.04	.8074	0.000000	3.94	.431	3162.	.7462	.9404	.7617	25.04	.8074	0.000000
3.94	.431	3262.	.7462	.9424	.7617	25.14	.8074	0.000000	3.94	.431	3262.	.7462	.9424	.7617	25.14	.8074	0.000000
3.94	.431	3362.	.7462	.9444	.7617	25.24	.8074	0.000000	3.94	.431	3362.	.7462	.9444	.7617	25.24	.8074	0.000000
3.94	.431	3462.	.7462	.9464	.7617	25.34	.8074	0.000000	3.94	.431	3462.	.7462	.9464	.7617	25.34	.8074	0.000000
3.94	.431	3562.	.7462	.9484	.7617	25.44	.8074	0.000000	3.94	.431	3562.	.7462	.9484	.7617	25.44	.8074	0.000000
3.94	.431	3662.	.7462	.9504	.7617	25.54	.8074	0.000000	3.94	.431	3662.	.7462	.9504	.7617	25.54	.8074	0.000000
3.94	.431	3762.	.7462	.9524	.7617	25.64	.8074	0.000000	3.94	.431	3762.	.7462	.9524	.7617	25.64	.8074	0.000000
3.94	.431	3862.	.7462	.9544	.7617	25.74	.8074	0.000000	3.94	.431	3862.	.7462	.9544	.7617	25.74	.8074	0.000000
3.94	.431	3962.	.7462	.9564	.7617	25.84	.8074	0.000000	3.94	.431	3962.	.7462	.9564	.7617	25.84	.8074	0.000000
3.94	.431	4062.	.7462	.9584	.7617	25.94	.8074	0.000000	3.94	.431	4062.	.7462	.9584	.7617	25.94	.8074	0.000000
3.94	.431	4162.	.7462	.9604	.7617	26.04	.8074	0.000000	3.94	.431	4162.	.7462	.9604	.7617	26.04	.8074	0.000000
3.94	.431	4262.	.7462	.9624	.7617	26.14	.8074	0.000000	3.94	.431	4262.	.7462	.9624	.7617	26.14	.8074	0.000000
3.94	.431	4362.	.7462	.9644	.7617	26.24	.8074	0.000000	3.94	.431	4362.	.7462	.9644	.7617	26.24	.8074	0.000000
3.94	.431	4462.	.7462	.9664	.7617	26.34	.8074	0.000000	3.94	.431	4462.	.7462	.9664	.7617	26.34	.8074	0.000000
3.94	.431	4562.	.7462	.9684	.7617	26.44	.8074	0.000000	3.94	.431	4562.	.7462	.9684	.7617	26.44	.8074	0.000000
3.94	.431	4662.	.7462	.9704	.7617	26.54	.8074	0.000000	3.94	.431	4662.	.7462	.9704	.7617	26.54	.8074	0.000000
3.94	.431	4762.	.7462	.9724	.7617	26.64	.8074	0.000000	3.94	.431	4762.	.7462	.9724	.7617	26.64	.8074	0.000000
3.94	.431	4862.	.7462	.9744	.7617	26.74	.8074	0.000000	3.94	.431	4862.	.7462	.9744	.7617	26.74	.8074	0.000000
3.94	.431	4962.	.7462	.9764	.7617	26.84	.8074	0.000000	3.94	.431	4962.	.7462	.9764	.7617	26.84	.8074	0.000000
3.94	.431	5062.	.7462	.9784	.7617	26.94	.8074	0.000000	3.94	.431	5062.	.7462	.9784	.7617	26.94	.8074	0.000000
3.94	.431	5162.	.7462	.9804	.7617	27.04	.8074	0.000000	3.94	.431	5162.	.7462	.9804	.7617	27.04	.8074	0.000000
3.94	.431	5262.	.7462	.9824	.7617	27.14	.8074	0.000000	3.94	.431	5262.	.7462	.9824	.7617	27.14	.8074	0.000000
3.94	.431	5362.	.7462	.9844	.7617	27.24	.8074	0.000000	3.94	.431	5362.	.7462	.9844	.7617	27.24	.8074	0.000000
3.94	.431	5462.	.7462	.9864	.7617	27.34	.8074	0.000000	3.94	.431	5462.	.7462	.9864	.7617	27.34	.8074	0.000000
3.94	.431	5562.	.7462	.9884	.7617	27.44	.8074	0.000000	3.94	.431	5562.	.7462	.9884	.7617	27.44	.8074	0.000000
3.94	.431	5662.	.7462	.9904	.7617	27.54	.8074	0.000000	3.94	.431	5662.	.7462	.9904	.7617	27.54	.8074	0.000000
3.94	.431																

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Y (CM)	Y/TMETH	V-PLUS	TABLE A11. W/WE	(CONT.) RHO/RHOE	U/UE	I1-PLUS	TAU/TAU-MAX	V/U
1.262	5.185	2716.	.600	.9389	.8875	25.64	.6807	.002730
1.372	5.431	2844.	.654	.9411	.8921	25.78	.6540	.000781
1.371	5.637	2951.	.8724	.9440	.8979	25.96	.6311	.000824
1.417	5.825	3049.	.8796	.9469	.9039	26.15	.6004	.000865
1.456	5.996	3134.	.8846	.9499	.9079	26.27	.5903	.000700
1.517	6.237	3245.	.8936	.9528	.9155	26.51	.5601	.000956
1.545	6.435	3369.	.8988	.9549	.9197	26.64	.5357	.001300
1.607	6.808	3459.	.9074	.9569	.9244	26.86	.5151	.001039
1.677	6.895	3510.	.9135	.9584	.9277	27.02	.4776	.001104
1.720	7.072	3702.	.9198	.9614	.9311	27.15	.4547	.001144
1.771	7.281	3812.	.9254	.9644	.9341	27.32	.4276	.001192
1.809	7.438	3894.	.9308	.9677	.9367	27.46	.4072	.001227
1.845	7.594	3970.	.9337	.9711	.9441	27.53	.3840	.001260
1.879	7.725	4044.	.9368	.9741	.9455	27.61	.3696	.001297
1.937	7.944	4159.	.9433	.9761	.9557	27.77	.3409	.001341
1.981	8.142	4263.	.9475	.9760	.9591	27.88	.3145	.001366
2.014	8.278	4334.	.9528	.9784	.9633	28.01	.2974	.001415
2.041	8.471	4435.	.9570	.9802	.9666	28.11	.2726	.001456
2.107	8.433	4520.	.9611	.9821	.9698	28.21	.2520	.001490
2.139	8.795	4604.	.9652	.9839	.9730	28.32	.2317	.001524
2.176	9.044	4683.	.9687	.985	.9758	28.40	.2130	.001555
2.209	9.082	4755.	.9704	.9864	.9773	28.45	.1964	.001582
2.244	9.223	4828.	.9752	.9885	.9809	28.57	.1795	.001610
2.289	9.411	4927.	.9754	.9885	.9810	28.57	.1575	.001644
2.337	9.484	4945.	.9792	.9903	.9839	28.66	.1492	.001600
2.332	9.584	5020.	.9806	.9910	.9850	28.70	.1374	.001679
2.363	9.713	5085.	.9818	.9915	.9860	28.73	.1235	.001701
2.377	9.854	5159.	.9858	.9934	.9891	28.83	.1193	.001726
2.452	10.079	5277.	.9868	.9938	.9898	28.85	.0850	.001763
2.431	10.199	5339.	.9887	.9947	.9913	28.90	.0731	.001782
2.520	10.361	5424.	.9906	.9954	.9928	28.94	.0537	.001927
2.571	10.449	5533.	.9918	.9961	.9937	28.97	.0399	.001937
2.607	10.714	5610.	.9937	.9970	.9951	29.02	.0285	.001957
2.637	10.820	5665.	.9946	.9975	.9959	29.04	.0181	.001870
2.670	10.974	5747.	.9954	.9978	.9965	29.06	.0061	.001869
2.716	11.144	5845.	.9967	.9984	.9975	29.09	0.0000	.001899
2.764	11.363	5949.	.9971	.9984	.9978	29.10	0.0000	.001899
2.840	11.674	6113.	.9980	.9995	.9992	29.15	0.0000	.001899
2.937	12.073	6370.	.9984	.9993	.9998	29.14	0.0000	.001899
3.039	12.407	6539.	.9992	.9994	.9994	29.16	0.0000	.001899
3.135	12.887	6747.	.9996	.9998	.9997	29.16	0.0000	.001899
3.243	13.351	6990.	.9996	.9995	.9993	29.15	0.0000	.001899
3.344	13.924	7219.	.9990	.9995	.9993	29.15	0.0000	.001899
3.443	14.223	7444.	.9998	.9999	.9998	29.17	0.0000	.001899
3.543	14.641	7665.	.9998	.9999	.9998	29.17	0.0000	.001899
3.631	14.893	7750.	1.0002	1.0001	1.0001	29.18	0.0000	.001899
3.834	15.643	7924.	1.0002	1.0001	1.0003	29.18	0.0000	.001899
3.871	15.993	7900.	.9996	.9998	.9997	29.17	0.0000	.001899

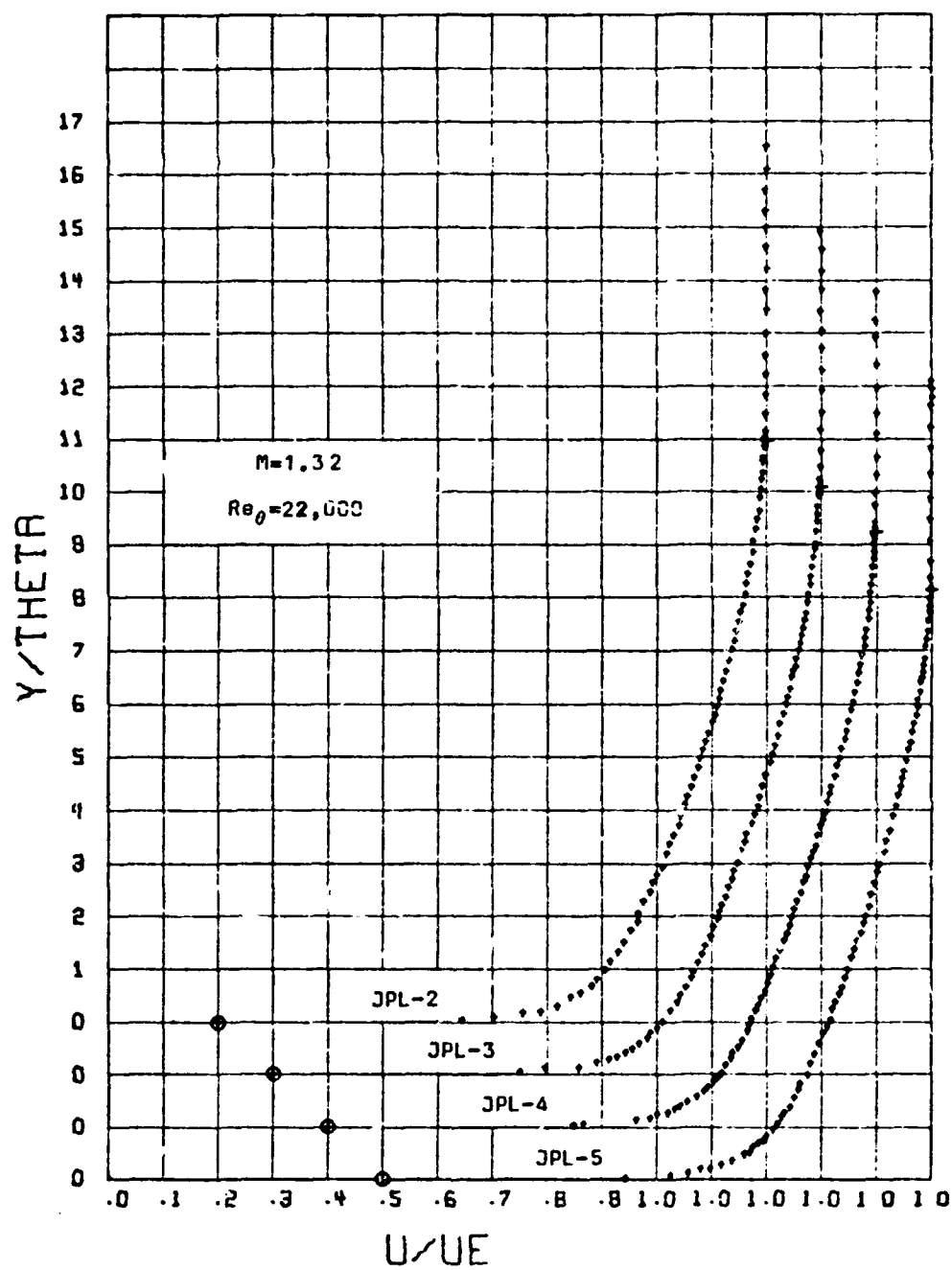
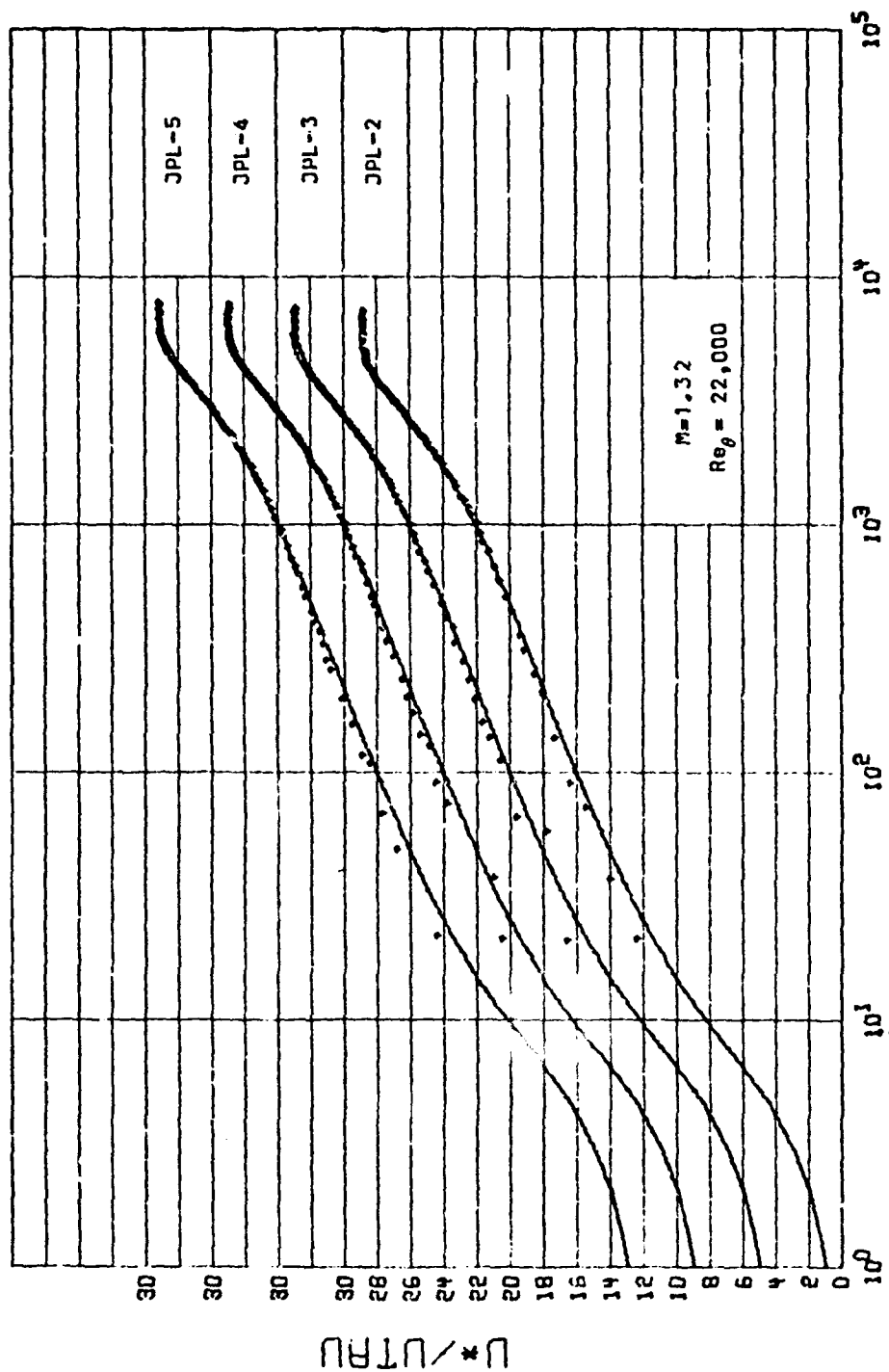


Figure A29. Mean Velocity Profiles.

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Figure A30. Van Driest Scaled Mean Velocity Profiles.

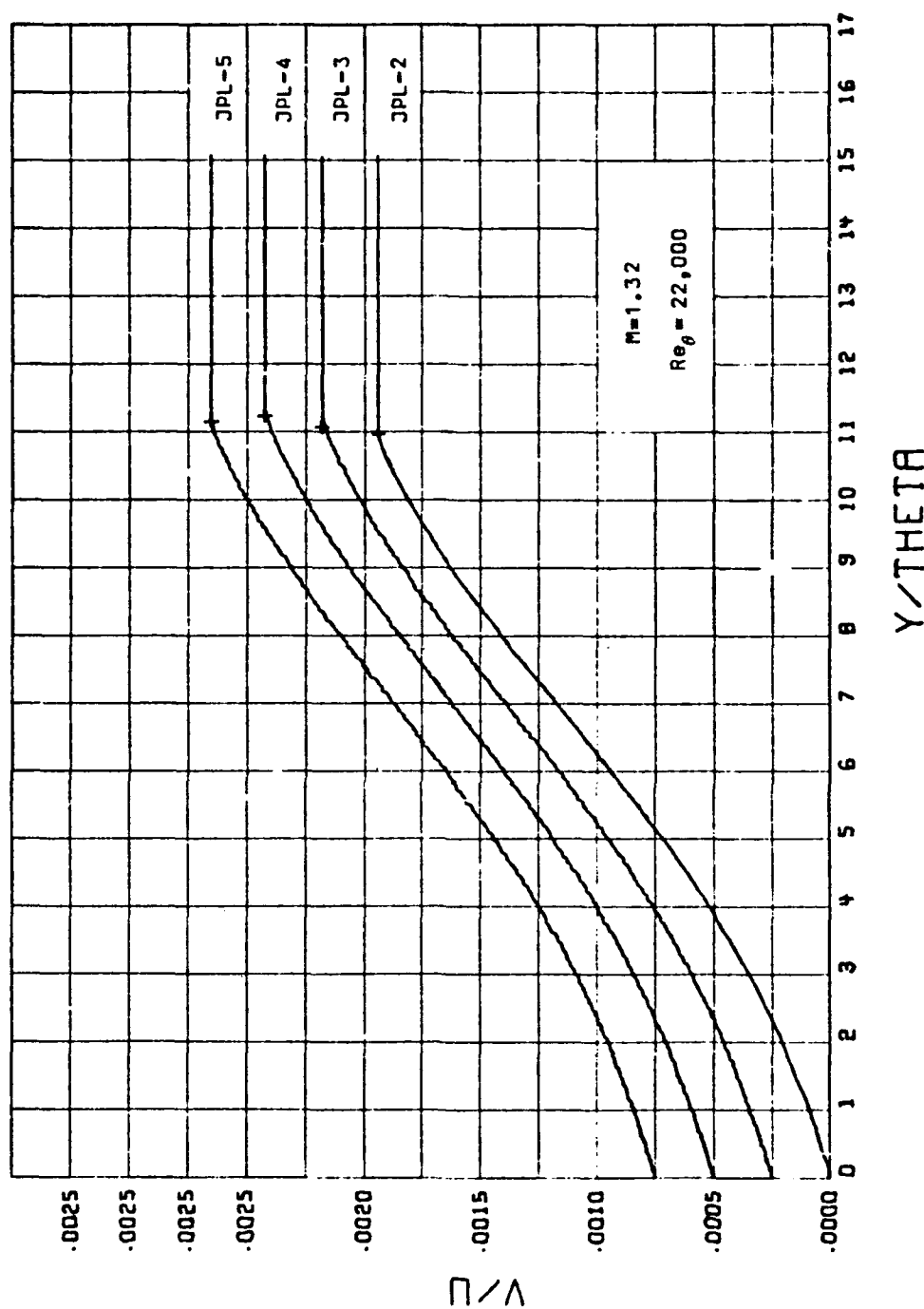


Figure A31. Normal Velocity Distribution.

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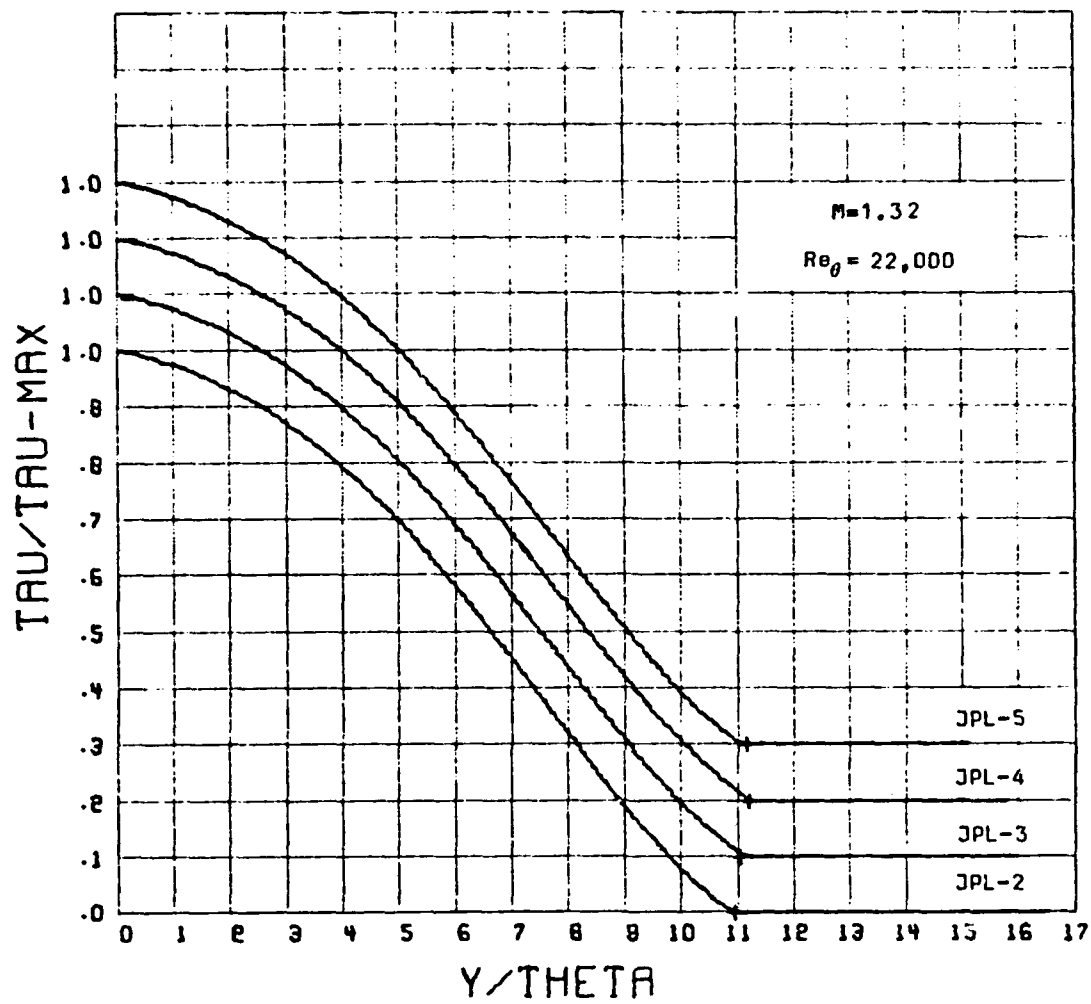


Figure A 32. Shear Stress Distribution.

TABLE A12. DATA SUMMARY
PROFILE - JPL-2 - - - PITOT PRESSURE DATA

EDGE MACH NO. = 1.3082
X = 26.21 CM
TOTAL PRESSURE = .1333E+06 N/m²
TOTAL TEMPERATURE = 324.67 DEG-K

LEAST SQUARE FIT PARAMETERS									
HUE = 409.33 M/SEC		DELTA STAR = .3783 CM		THETA = .1945 CM		M = 1.944			
RE-DELTA-STAR = 72400.		RE-THETA = 37230.		NUHALL = .3710 CM=2/SEC		DELTA = 2.2149 CM			
CF = .001844		YMAX = 2.076 CM		PI = .6272		YMIN = .051 CM			
CHISQR = .4842E-05									
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHDE	U/UE	U-PLUS	TAU/TAU-MAX	V/U	
0.000	0.000	0.	0.0000	.7674	0.0000	0.00	1.0000	0.000000	
.011	.058	43.	.4300	.8104	.5476	13.90	1.0000	0.000009	
.022	.117	87.	.4953	.8245	.5455	15.92	.9989	.000105	
.033	.176	131.	.5510	.8381	.6019	17.61	.9959	.000017	
.044	.235	175.	.5803	.8458	.6310	18.49	.9939	.000123	
.078	.404	300.	.6073	.8518	.6524	19.15	.9921	.000020	
.100	.515	382.	.6170	.8560	.6649	19.58	.9904	.000139	
.111	.574	426.	.6257	.8585	.6753	19.84	.9873	.000044	
.129	.645	494.	.6365	.8617	.6857	20.14	.9845	.000152	
.142	.731	542.	.6479	.8651	.6946	20.49	.9825	.000034	
.172	.897	658.	.6582	.8676	.7045	20.73	.9773	.000072	
.193	.992	736.	.6701	.8719	.7176	21.13	.9737	.000041	
.223	1.148	852.	.6828	.8759	.7296	21.50	.9679	.000143	
.245	1.269	935.	.6912	.8785	.7374	21.75	.9637	.000107	
.275	1.416	1051.	.7041	.8827	.7494	22.11	.9575	.000122	
.302	1.553	1153.	.7096	.8845	.7544	22.27	.9517	.000136	
.317	1.631	1211.	.7152	.8864	.7597	22.43	.9483	.000144	
.341	1.756	1301.	.7225	.8888	.7664	22.64	.9429	.000157	
.365	1.880	1395.	.7315	.8919	.7746	22.90	.9371	.000170	
.388	1.997	1482.	.7339	.8927	.7768	22.96	.9315	.000182	
.429	2.204	1637.	.7451	.8966	.7849	23.28	.9210	.000204	
.457	2.350	1744.	.7519	.8989	.7931	23.47	.9135	.000223	
.490	2.519	1870.	.7580	.9011	.7986	23.64	.9041	.000243	
.518	2.663	1976.	.7657	.9038	.8055	23.86	.8959	.000260	
.540	2.878	2136.	.7751	.9071	.8138	24.12	.8828	.000288	
.569	3.091	2287.	.7841	.9104	.8217	24.37	.8699	.000315	
.637	3.276	2432.	.7880	.9119	.8252	24.49	.8567	.000342	
.670	3.446	2558.	.7959	.9147	.8321	24.70	.8448	.000366	
.703	3.614	2684.	.8049	.9181	.8400	24.95	.8324	.000390	
.719	3.799	2820.	.8128	.9211	.8469	25.16	.8183	.000418	
.749	3.955	2936.	.8171	.9227	.8504	25.28	.8060	.000442	
.787	4.099	3042.	.8235	.9251	.8542	25.46	.7942	.000465	
.829	4.254	3159.	.8279	.9268	.8599	25.58	.7809	.000490	
.865	4.452	3304.	.8376	.9306	.8682	25.84	.7637	.000523	
.899	4.569	3391.	.8407	.9318	.8709	25.92	.7531	.000543	
.918	4.719	3503.	.8466	.9341	.8759	26.08	.7401	.000569	
.947	4.922	3653.	.8514	.9360	.8800	26.21	.7267	.000594	
.983	5.104	3789.	.8601	.9395	.8874	26.45	.7136	.000637	
1.027	5.281	3920.	.8647	.9413	.8913	26.57	.7004	.000670	
1.061	5.457	4050.	.8704	.9434	.8960	26.73	.6868	.000703	
1.097	5.640	4186.	.8754	.9456	.9002	26.86	.6754	.000738	

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TABLE A12. (CONT.)
M/NE RHO/RHFE

Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHFE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
1.132	5.822	4322.	.8823	.9485	.9059	27.04	.6252	.000773
1.158	5.953	4419.	.8860	.9500	.9090	27.14	.6105	.000799
1.181	6.173	4545.	.8913	.9522	.9134	27.28	.5910	.000832
1.209	6.318	4690.	.8983	.9551	.9192	27.47	.5682	.000872
1.241	6.492	4811.	.9020	.9566	.9222	27.56	.5488	.000905
1.292	6.645	4932.	.9079	.9591	.9271	27.72	.5290	.000938
1.325	6.815	5059.	.9125	.9611	.9308	27.84	.5084	.000973
1.356	6.971	5174.	.9172	.9630	.9346	27.96	.4890	.001005
1.388	7.134	5286.	.9216	.9650	.9382	28.08	.4687	.001038
1.432	7.363	5445.	.9256	.9667	.9414	28.19	.4400	.001085
1.457	7.494	5562.	.9305	.9688	.9453	28.31	.4236	.001112
1.496	7.689	5707.	.9349	.9707	.9489	28.43	.3987	.001153
1.529	7.859	5833.	.9403	.9730	.9532	28.57	.3772	.001187
1.569	8.068	5989.	.9436	.9745	.9559	28.65	.3507	.001230
1.607	8.264	6134.	.9495	.9771	.9606	28.81	.3259	.001269
1.637	8.414	6245.	.9579	.9786	.9632	28.89	.3071	.001299
1.681	8.642	6415.	.9574	.9804	.9668	29.01	.2784	.001343
1.711	8.799	6531.	.9601	.9818	.9690	29.08	.2593	.001373
1.742	9.008	6686.	.9656	.9843	.9733	29.22	.2339	.001413
1.785	9.178	6812.	.9692	.9859	.9761	29.31	.2137	.001444
1.826	9.387	6967.	.9719	.9871	.9782	29.38	.1893	.001442
1.856	9.543	7084.	.9750	.9885	.9806	29.46	.1712	.001509
1.897	9.752	7239.	.9783	.9900	.9832	29.55	.1483	.001544
1.925	9.896	7345.	.9800	.9908	.9846	29.59	.1329	.001568
1.953	10.039	7452.	.9833	.9923	.9871	29.67	.1179	.001590
1.993	10.248	7607.	.9844	.9928	.9880	29.70	.0965	.001623
2.024	10.405	7723.	.9868	.9939	.9898	29.76	.0817	.001645
2.051	10.542	7825.	.9885	.9947	.9911	29.81	.0680	.001664
2.076	10.673	7922.	.9902	.9954	.9924	29.85	.0570	.001682
2.115	10.875	8072.	.9912	.9959	.9932	29.87	.0403	.001707
2.147	11.018	8193.	.9927	.9964	.9944	29.91	.0275	.001726
2.176	11.189	8305.	.9936	.9970	.9951	29.94	.0163	.001742
2.207	11.345	8421.	.9939	.9972	.9953	29.94	.0055	.001758
2.237	11.476	8518.	.9945	.9974	.9958	29.96	0.0000	.001766
2.269	11.665	8658.	.9953	.9978	.9964	29.98	0.0000	.001766
2.341	12.037	8935.	.9969	.9985	.9976	30.02	0.0000	.001766
2.423	12.455	9245.	.9989	.9995	.9991	30.07	0.0000	.001766
2.514	12.925	9594.	.9994	.9997	.9995	30.08	0.0000	.001766
2.599	13.342	9919.	.9995	.9997	.9995	30.08	0.0000	.001766
2.679	13.773	10224.	.9990	.9995	.9992	30.07	0.0000	.001766
2.764	14.211	10548.	.9991	.9996	.9993	30.07	0.0000	.001766
2.840	14.607	10839.	.9998	.9999	.9999	30.09	0.0000	.001766
2.913	15.001	11134.	.9998	.9999	.9998	30.09	0.0000	.001766
2.989	15.366	11406.	.9998	.9999	.9998	30.09	0.0000	.001766
3.063	15.745	11687.	1.0004	1.0002	1.0003	30.11	0.0000	.001766
3.135	16.117	11983.	1.0005	1.0002	1.0004	30.11	0.0000	.001766
3.198	16.443	12205.	1.0007	1.0003	1.0005	30.12	0.0000	.001766

TABLE A12. (CONT.)
PROFILE - JPL-3 - - - PITOT PRESSURE DATA

FDGE MACH NO. = 1.3173
X = -7.62 CM
TOTAL PRESSURE = .1335E+06 N/M**2
TOTAL TEMPERATURE = 322.72 DEG-K

UE = 409.20 M/SEC
RE-DELTA-STAR = 72780.
DELTA STAR = .3969 CM
THETA = .2047 CM
M = 1.938
MUWALL = .3709 CM**2/SEC

LEAST SQUARE FIT PARAMETERS
UTAU = 14.2605 M/SEC
CHISQR = .2328E-04
CF = .001858
YMAX = 2.244 CM
PI = .550R
YMIN = .036 CM
DELTA = 2.4022 CM

Y (CM)	Y/THETA	Y-PLUS	M/WE	RHO/RH0E	U/U0	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.7650	0.0000	0.00	1.0000	0.000000
.010	.049	39.	.4324	.8089	.4807	13.92	1.0000	0.000000
.021	.105	83.	.5072	.8356	.5582	15.22	.9900	.000305
.036	.179	141.	.5494	.8539	.6009	17.49	.9974	.000011
.052	.254	200.	.5795	.8639	.6304	18.39	.9957	.000017
.063	.310	244.	.6007	.8694	.6516	19.02	.9942	.000022
.070	.440	346.	.6142	.8736	.6648	19.42	.9907	.000034
.102	.514	405.	.6330	.8792	.6829	19.97	.9885	.000040
.125	.613	483.	.6440	.8824	.6934	20.29	.9875	.000049
.151	.737	581.	.6558	.8861	.7047	20.63	.9815	.000060
.173	.849	668.	.6656	.8891	.7140	20.92	.9777	.000071
.194	.943	747.	.6776	.8929	.7252	21.26	.9742	.000080
.222	1.085	854.	.6847	.8951	.7319	21.47	.9692	.000093
.243	1.215	957.	.6928	.8978	.7395	21.70	.9647	.000105
.269	1.314	1035.	.7010	.8985	.7471	21.93	.9603	.000115
.284	1.399	1093.	.7086	.8980	.7541	22.15	.9572	.000122
.311	1.519	1184.	.7157	.8953	.7606	22.35	.9518	.000135
.334	1.630	1284.	.7224	.8976	.7668	22.54	.9469	.000147
.372	1.817	1430.	.7304	.8904	.7742	22.77	.9385	.000166
.398	1.947	1533.	.7365	.8924	.7796	22.94	.9324	.000180
.430	2.102	1655.	.7453	.8955	.7876	23.19	.9248	.000197
.458	2.234	1725.	.7511	.8975	.7927	23.34	.9178	.000213
.484	2.375	1810.	.7564	.8994	.7975	23.49	.9104	.000229
.521	2.513	2006.	.7656	.9027	.8059	23.75	.9011	.000249
.571	2.790	2197.	.7767	.9067	.8156	24.06	.8971	.000274
.601	2.930	2314.	.7798	.9079	.8184	24.14	.8981	.000295
.637	3.113	2451.	.7896	.9111	.8261	24.39	.8971	.000320
.679	3.317	2612.	.7944	.9133	.8313	24.55	.8937	.000348
.712	3.479	2739.	.8006	.9154	.8367	24.72	.8926	.000370
.753	3.649	2905.	.8064	.9178	.8417	24.88	.8926	.000400
.789	3.857	3037.	.8149	.9210	.8491	25.11	.8915	.000424
.844	4.006	3154.	.8183	.9224	.8571	25.20	.8934	.000447
.884	4.273	3325.	.8261	.9253	.8650	25.41	.8983	.000480
.905	4.421	3441.	.8346	.9287	.8697	25.76	.7569	.000512
.935	4.570	3598.	.8389	.9304	.8697	25.99	.7569	.000573
.981	4.793	3774.	.8477	.9334	.8772	26.17	.7165	.000611
1.027	5.016	3950.	.8543	.9365	.8829	26.31	.7053	.000660
1.061	5.194	4052.	.8593	.9385	.8870	26.53	.6746	.000683
1.111	5.474	4272.	.8678	.9420	.8941	26.71	.6603	.000713
1.164	5.557	4399.	.8745	.9447	.8997	26.92	.6425	.000744
1.179	5.761	4536.	.8785	.9464	.9031	26.92		

TABLE A17. (CONT.)
M/NE

Y (C-4)	Y/THETA	Y-PLUS	M/NE	RHO/RWFE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
1.217	5.947	4.682.	.8829	.9482	.9047	26.93	.6228	.000779
1.250	6.108	4.809.	.8874	.9500	.9104	27.05	.6054	.0007410
1.283	6.249	4.936.	.8936	.9526	.9155	27.22	.5877	.000840
1.310	6.443	5.073.	.8993	.9550	.9202	27.37	.5683	.0009874
1.340	6.641	5.229.	.9041	.9571	.9241	27.49	.5457	.0009312
1.395	6.815	5.366.	.9094	.9593	.9285	27.63	.5257	.0009347
1.423	6.951	5.473.	.9148	.9616	.9329	27.77	.5098	.0009873
1.443	7.144	5.625.	.9188	.9634	.9361	27.88	.4871	.001012
1.494	7.299	5.747.	.9238	.9655	.9401	28.01	.4684	.001042
1.534	7.491	5.896.	.9285	.9676	.9439	28.13	.4455	.001081
1.545	7.646	6.020.	.9321	.9692	.9468	28.22	.4268	.001111
1.601	7.820	6.157.	.9360	.9709	.9499	28.32	.4058	.001146
1.639	8.004	6.303.	.9409	.9730	.9538	28.45	.3831	.001183
1.680	8.204	6.460.	.9448	.9747	.9569	28.55	.3590	.001222
1.720	8.402	6.616.	.9488	.9765	.9601	28.65	.3349	.001261
1.748	8.539	6.723.	.9506	.9773	.9615	28.70	.3184	.001267
1.797	8.775	6.909.	.9578	.9805	.9672	28.88	.2900	.001332
1.835	8.941	7.055.	.9617	.9823	.9703	28.98	.2678	.001367
1.843	9.087	7.163.	.9637	.9832	.9718	29.03	.2517	.001393
1.905	9.302	7.374.	.9673	.9849	.9747	29.13	.2279	.001430
1.969	9.519	7.495.	.9720	.9870	.9784	29.25	.2030	.001469
1.993	9.736	7.666.	.9750	.9884	.9807	29.32	.1787	.001507
2.023	9.871	7.778.	.9789	.9902	.9837	29.42	.1631	.001531
2.043	10.077	7.934.	.9809	.9911	.9853	29.47	.1419	.001563
2.056	10.238	8.061.	.9838	.9924	.9875	29.55	.1252	.001569
2.177	10.387	8.178.	.9852	.9931	.9886	29.58	.1101	.001612
2.177	10.585	8.335.	.9875	.9941	.9904	29.64	.0908	.001642
2.217	10.827	8.525.	.9900	.9953	.9923	29.70	.0683	.001676
2.244	10.958	8.628.	.9907	.9956	.9929	29.72	.0567	.001693
2.286	11.162	8.789.	.9920	.9962	.9938	29.75	.0394	.001720
2.327	11.367	8.950.	.9951	.9977	.9962	29.83	.0231	.001744
2.343	11.441	9.059.	.9947	.9975	.9959	29.82	.0175	.001753
2.373	11.590	9.126.	.9954	.9978	.9965	29.84	.0066	.001769
2.413	11.782	9.277.	.9984	.9984	.9974	29.87	0.0000	.001779
2.459	12.012	9.458.	.9970	.9984	.9977	29.88	0.0000	.001779
2.526	12.334	9.712.	.9980	.9980	.9985	29.90	0.0000	.001779
2.600	12.709	10.000.	.9991	.9994	.9993	29.93	0.0000	.001779
2.643	13.004	10.239.	.9984	.9997	.9995	29.94	0.0000	.001779
2.743	13.395	10.547.	.9993	.9997	.9995	29.94	0.0000	.001779
2.835	13.847	10.903.	.9995	.9998	.9996	29.94	0.0000	.001779
2.932	14.319	11.274.	1.0004	1.0001	1.0003	29.96	0.0000	.001779
3.036	14.827	11.675.	1.0006	1.0003	1.0005	29.97	0.0000	.001779
3.110	15.187	11.958.	1.0003	1.0001	1.0002	29.96	0.0000	.001779
3.196	15.559	12.251.	.9998	.9999	.9998	29.95	0.0000	.001779
3.242	16.030	12.622.	.9999	.9999	.9999	29.95	0.0000	.001779
3.371	16.464	12.964.	.9998	.9999	.9998	29.95	0.0000	.001779

TABLE A12. (CONT.)
PROFILE - JPL-4 - - - PITOT PRESSURE DATA

ENGINE MACH NO.= 1.3125					TOTAL PRESSURE=.1339E+06 N/M ²					TOTAL TEMPERATURE= 323.70 DEG-K				
X= 0.00 CM					DELTA STAR= .4061 CM					THETA= .2174 CM				
RE-DELTA-STAR= 73130.					RE-THETA= 37900.					MINWALL= .3685 CM*2/SEC				
					M= 1.929					CF= .001788				
LEAST SQUARE FIT PARAMETERS										DELTA= 2.4868 CM				
CF= .001860										PI= .5314				
CHISOE= .277RE-04										YMIN= .038 CM				
Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/U						
0.000	0.000	0.	0.0000	.7663	0.0000	0.00	1.0000	0.000000						
.010	.048	39.	.4237	.8082	.4712	13.64	1.0000	0.000000						
.020	.096	78.	.5008	.8249	.5514	16.02		0.000004						
.030	.138	112.	.5395	.8343	.5906	17.19	.9982	.000008						
.040	.181	147.	.5611	.8399	.6123	17.84	.9973	.000011						
.050	.224	201.	.5812	.8452	.6322	18.44	.9957	.000017						
.060	.267	255.	.5919	.8481	.6427	18.75	.9940	.000023						
.070	.310	308.	.6167	.8582	.6469	19.49	.9917	.000030						
.080	.353	362.	.6292	.8589	.6789	19.85	.9897	.000037						
.090	.396	415.	.6422	.8627	.6914	20.23	.9864	.000046						
.100	.439	468.	.6551	.8666	.7038	20.61	.9823	.000058						
.110	.482	521.	.6686	.8707	.7165	21.00	.9787	.000065						
.120	.525	574.	.6824	.8732	.7298	21.22	.9755	.000076						
.130	.568	627.	.6963	.8758	.7315	21.56	.9715	.000084						
.140	.611	680.	.7106	.8781	.7387	21.68	.9674	.000097						
.150	.654	733.	.7253	.8803	.7445	21.86	.9625	.000109						
.160	.697	786.	.7404	.8828	.7514	22.07	.9586	.000118						
.170	.740	839.	.7559	.8853	.7584	22.29	.9543	.000129						
.180	.783	892.	.7715	.8882	.7644	22.53	.9502	.000141						
.190	.826	945.	.7873	.8913	.7748	22.70	.9466	.000151						
.200	.869	998.	.8031	.8933	.7800	22.95	.9436	.000164						
.210	.912	1051.	.8195	.8964	.7891	23.20	.9406	.000174						
.220	.955	1104.	.8364	.8993	.7929	23.35	.9377	.000184						
.230	.998	1157.	.8538	.9003	.7982	23.52	.9307	.000202						
.240	1.041	1210.	.8715	.9043	.8080	23.82	.9249	.000237						
.250	1.084	1263.	.8896	.9063	.8132	23.94	.9211	.000269						
.260	1.127	1316.	.9081	.9077	.8164	24.09	.9185	.000287						
.270	1.170	1369.	.9270	.9103	.8277	24.28	.9170	.000311						
.280	1.213	1422.	.9464	.9134	.8303	24.52	.9157	.000334						
.290	1.256	1475.	.9663	.9155	.8352	24.67	.9145	.000356						
.300	1.299	1528.	.9866	.9178	.8368	24.82	.9136	.000369						
.310	1.342	1581.	.1000	.9201	.8458	25.01	.9201	.000404						
.320	1.385	1634.	.1000	.9247	.8514	25.18	.9247	.000435						
.330	1.428	1687.	.1000	.9286	.8561	25.33	.9287	.000460						
.340	1.471	1740.	.1000	.9329	.8637	25.57	.9317	.000497						
.350	1.514	1793.	.1000	.9374	.8674	25.69	.9345	.000525						
.360	1.557	1846.	.1000	.9419	.8722	25.90	.9379	.000550						
.370	1.600	1899.	.1000	.9464	.8783	26.33	.9307	.000582						
.380	1.643	1952.	.1000	.9509	.8845	26.76	.9247	.000612						
.390	1.686	2005.	.1000	.9554	.8904	26.57	.9181	.000641						
.400	1.729	2058.	.1000	.9600	.8953	26.39	.9160	.000681						
.410	1.772	2111.	.1000	.9646	.9001			.000718						

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Y (CM)	Y/THETA	Y-PLUS	TABLE A12. (CONT.) M/WE	RH/RHDE	U/UE	I-PLUS	TAU/TAU-MAX	V/U
1.133	5.423	4573.	.8758	.9455	.9006	26.74	.6588	.00712
1.221	5.804	4720.	.8813	.9478	.9052	26.89	.6403	.00745
1.252	5.949	4838.	.8850	.9493	.9083	26.99	.6249	.00772
1.297	6.146	5015.	.8909	.9518	.9132	27.14	.6019	.00812
1.338	6.359	5172.	.8966	.9542	.9179	27.30	.5809	.00848
1.369	6.504	5290.	.8999	.9555	.9206	27.39	.5648	.00874
1.407	6.685	5437.	.9046	.9575	.9245	27.51	.5444	.00891
1.449	6.844	5598.	.9106	.9601	.9294	27.66	.5217	.00949
1.480	7.035	5722.	.9148	.9619	.9328	27.77	.5042	.00979
1.513	7.191	5849.	.9202	.9641	.9371	27.91	.4807	.01009
1.542	7.421	6036.	.9250	.9662	.9410	28.04	.4507	.01034
1.597	7.540	6173.	.9305	.9684	.9454	28.18	.4388	.01087
1.634	7.745	6315.	.9343	.9703	.9485	28.28	.4179	.01127
1.640	7.982	6492.	.9385	.9721	.9519	28.39	.3918	.01164
1.714	8.145	6624.	.9440	.9745	.9542	28.53	.3722	.01166
1.747	8.302	6752.	.9464	.9756	.9542	28.59	.3533	.01226
1.785	8.483	6899.	.9515	.9779	.9622	28.72	.3316	.01261
1.826	8.674	7056.	.9553	.9794	.9652	28.82	.3095	.01268
1.841	8.846	7104.	.9575	.9805	.9670	28.89	.2884	.01330
1.884	9.002	7321.	.9623	.9827	.9707	29.00	.2699	.01329
1.924	9.207	7483.	.9640	.9844	.9736	29.09	.2460	.0147
1.973	9.374	7628.	.9679	.9852	.9751	29.14	.2265	.01427
2.006	9.532	7753.	.9726	.9874	.9783	29.26	.2084	.01455
2.034	9.665	7861.	.9742	.9880	.9800	29.30	.1938	.01478
2.070	9.834	7999.	.9769	.9893	.9822	29.37	.1752	.01517
2.094	9.967	8104.	.9785	.9900	.9834	29.41	.1608	.01529
2.131	10.124	8234.	.9820	.9914	.9841	29.50	.1442	.01555
2.159	10.257	8342.	.9834	.9923	.9872	29.54	.1304	.01576
2.199	10.450	8499.	.9859	.9934	.9891	29.60	.1110	.01605
2.246	10.625	8641.	.9870	.9939	.9900	29.63	.0937	.01632
2.270	10.757	8774.	.9896	.9951	.9920	29.69	.0786	.01655
2.304	10.968	8921.	.9902	.9954	.9925	29.71	.0620	.01680
2.341	11.125	9049.	.9922	.9963	.9940	29.76	.0486	.01700
2.375	11.300	9214.	.9932	.9968	.9947	29.78	.0317	.01716
2.407	11.456	9382.	.9943	.9973	.9957	29.81	.0158	.01749
2.449	11.646	9505.	.9957	.9980	.9967	29.85	.0049	.01773
2.491	11.837	9628.	.9967	.9980	.9975	29.87	0.0000	.01773
2.515	11.952	9721.	.9978	.9985	.9975	29.87	0.0000	.01773
2.590	12.309	10011.	.9978	.9990	.9983	29.90	0.0000	.01773
2.661	12.645	10285.	.9987	.9994	.9990	29.92	0.0000	.01773
2.740	13.020	10590.	.9991	.9995	.9993	29.93	0.0000	.01773
2.817	13.340	10850.	.9991	.9995	.9993	29.93	0.0000	.01773
2.871	13.641	11095.	.9997	.9998	.9997	29.95	0.0000	.01773
2.944	14.054	11394.	.9996	.9998	.9997	29.95	0.0000	.01773
3.017	14.311	11640.	.9999	.9999	.9999	29.95	0.0000	.01773
3.093	14.721	11974.	.9995	.9998	.9996	29.94	0.0000	.01773
3.150	15.107	12283.	1.0001	1.0000	1.0001	29.96	0.0000	.01773
3.276	15.544	12651.	1.0000	1.0000	1.0000	29.96	0.0000	.01773
3.360	15.944	13060.	1.0000	1.0000	1.0000	29.96	0.0000	.01773
3.433	16.334	13489.	.9999	.9999	.9998	29.95	0.0000	.01773
3.520	16.724	13603.	1.0000	1.0000	1.0000	29.96	0.0000	.01773

TABLE A12. (CONT.)

PROFILE - JPL-5 -- - PITOT PRESSURE DATA
 EDGE MACH NO. = 1.3130
 X = 7.62 CM
 TOTAL PRESSURE = .1330E+06 N/M²
 TOTAL TEMPERATURE = 319.81 DEG-K

UF = 406.36 M/SEC
 RE-DELTA-STAR = 77910.
 DELTA STAR = .4242 CM
 RE-THETA = .40210.
 THETA = .2199 CM
 NUWALL = .3649 CM**2/SEC
 M = 1.937

LEAST SQUARE FIT PARAMETERS
 UTAU = 14.0527 M/SEC
 CHISQR = .7885E-05
 CF = .001832
 YMAX = 2.439 CM

PI = .5630
 YMIN = .043 CM
 DELTA = 2.5667 CM

Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOF	U/UF	U-PLUS	TAU/TAU-MAX	V/VO
0.070	0.000	0.	0.0000	.7661	0.0040	0.00	1.0000	0.000000
.010	.046	38.	.4244	.8093	.4721	13.77	1.0000	0.000300
.022	.104	87.	.4553	.8146	.5044	14.73	.9989	.000005
.031	.144	172.	.5179	.8289	.5689	16.66	.9981	.000003
.043	.194	165.	.5501	.8369	.6013	17.54	.9970	.000012
.054	.249	210.	.5683	.8417	.6184	18.19	.9957	.000017
.061	.370	312.	.5988	.8500	.6494	19.10	.9926	.000027
.082	.423	356.	.6108	.8534	.6612	19.46	.9911	.000032
.109	.498	420.	.6224	.8567	.6724	19.80	.9890	.000038
.119	.544	459.	.6383	.8614	.6877	20.27	.9876	.000042
.144	.640	557.	.6484	.8645	.6974	20.57	.9840	.000052
.157	.718	606.	.6588	.8670	.7054	20.81	.9821	.000058
.173	.784	649.	.6654	.8697	.7135	21.06	.9796	.000064
.194	.887	748.	.6711	.8715	.7188	21.23	.9764	.000073
.214	.947	826.	.6814	.8747	.7286	21.53	.9731	.000091
.238	1.000	919.	.6870	.8765	.7338	21.69	.9691	.000141
.240	1.189	1002.	.7001	.8808	.7460	22.06	.9653	.000101
.249	1.322	1114.	.7042	.8828	.7516	22.24	.9600	.000114
.264	1.392	1173.	.7074	.8831	.7527	22.27	.9572	.000120
.330	1.508	1271.	.7145	.8862	.7611	22.54	.9524	.000132
.344	1.644	1403.	.7232	.8884	.7672	22.73	.9456	.000147
.347	1.769	1491.	.7307	.8910	.7741	22.94	.9409	.000158
.410	1.873	1579.	.7346	.8930	.7794	23.11	.9360	.000169
.443	2.035	1716.	.7430	.8952	.7853	23.29	.9283	.000186
.449	2.144	1809.	.7499	.8976	.7915	23.48	.9228	.000199
.513	2.343	1875.	.7562	.8999	.7972	23.66	.9126	.000221
.542	2.474	2088.	.7613	.9017	.8017	23.90	.9054	.000236
.546	2.587	2181.	.7679	.9040	.8076	23.99	.8997	.000249
.601	2.769	2317.	.7728	.9058	.8120	24.13	.8899	.000269
.641	2.929	2469.	.7851	.9103	.8229	24.47	.8790	.000291
.671	3.047	2611.	.7866	.9108	.8242	24.51	.8685	.000312
.715	3.266	2753.	.7915	.9124	.8285	24.55	.8575	.000334
.750	3.424	2890.	.7959	.9154	.8359	24.88	.8465	.000346
.784	3.602	3077.	.8039	.9173	.8384	24.99	.8342	.000361
.811	3.776	3125.	.8112	.9200	.8457	25.19	.8266	.000394
.844	3.810	3212.	.8143	.9212	.8484	25.28	.8189	.000419
.875	3.904	3369.	.8201	.9234	.8534	25.43	.8046	.000438
.905	4.134	3487.	.8260	.9257	.8585	25.60	.7936	.000459
.930	4.252	3565.	.8296	.9271	.8616	25.70	.7841	.000477
.951	4.364	3663.	.8315	.9278	.8632	25.75	.7764	.000491
.959	4.453	3819.	.8411	.9316	.8715	26.01	.7586	.000524

Y (CM)	Y/THETA	Y-PLUS	TABLE A12. (CONT.) H/ME	RHO/RHOF	U/VE	U-PLUS	TAU/TAU-MAX	V/U
1.024	4.698	3961.	8450	.9327	.8739	26.09	.7458	.000548
1.062	4.855	4093.	8509	.9354	.8797	26.27	.7316	.000574
1.131	5.148	4357.	8587	.9386	.8863	26.49	.7021	.000627
1.149	5.242	4504.	8658	.9414	.8923	26.68	.6850	.000659
1.205	5.505	4641.	8709	.9435	.8966	26.81	.6687	.000686
1.228	5.609	4729.	8744	.9449	.8995	26.91	.6581	.000705
1.276	5.829	4915.	8813	.9478	.9053	27.09	.6351	.000745
1.304	5.957	5022.	8847	.9492	.9081	27.18	.6214	.000769
1.334	6.096	5140.	8884	.9507	.9111	27.28	.6063	.000795
1.377	6.294	5306.	8932	.9527	.9151	27.41	.5846	.000832
1.410	6.444	5433.	8988	.9550	.9197	27.56	.5676	.000861
1.450	6.624	5585.	9025	.9566	.9227	27.65	.5471	.000896
1.489	6.804	5737.	9090	.9593	.9280	27.82	.5262	.000931
1.532	7.001	5903.	9147	.9618	.9327	27.98	.5031	.000969
1.577	7.204	6074.	9202	.9642	.9371	28.12	.4780	.001009
1.609	7.340	6196.	9225	.9651	.9390	28.18	.4616	.001037
1.657	7.570	6382.	9288	.9678	.9440	28.35	.4349	.001081
1.685	7.744	6529.	9339	.9701	.9482	28.48	.4138	.001115
1.725	7.883	6646.	9381	.9719	.9515	28.59	.3968	.001142
1.776	8.115	6842.	9421	.9737	.9547	28.69	.3683	.001188
1.814	8.289	6989.	9468	.9757	.9585	28.81	.3472	.001221
1.841	8.457	7130.	9517	.9779	.9623	28.94	.3267	.001254
1.896	8.661	7302.	9548	.9793	.9648	29.02	.3021	.001292
1.941	8.869	7478.	9593	.9816	.9692	29.16	.2770	.001331
1.974	9.020	7605.	9635	.9832	.9717	29.25	.2590	.001359
2.018	9.217	7771.	9668	.9847	.9743	29.33	.2358	.001395
2.056	9.392	7918.	9699	.9861	.9767	29.41	.2157	.001426
2.091	9.554	8055.	9731	.9875	.9781	29.49	.1972	.001455
2.127	9.714	8192.	9750	.9884	.9807	29.54	.1790	.001482
2.162	9.879	8329.	9783	.9900	.9833	29.63	.1608	.001510
2.186	9.939	8422.	9801	.9908	.9847	29.67	.1493	.001528
2.223	10.157	8563.	9825	.9916	.9865	29.73	.1314	.001555
2.250	10.320	8702.	9844	.9927	.9879	29.78	.1149	.001579
2.283	10.474	8832.	9860	.9935	.9892	29.82	.0993	.001603
2.327	10.633	8965.	9884	.9946	.9910	29.88	.0843	.001625
2.364	10.707	9111.	9907	.9952	.9921	29.92	.0681	.001649
2.400	10.966	9243.	9907	.9954	.9928	29.94	.0542	.001670
2.434	11.143	9395.	9916	.9961	.9936	29.97	.0391	.001693
2.462	11.244	9483.	9932	.9968	.9947	30.01	.0306	.001705
2.496	11.495	9615.	9943	.9973	.9956	30.03	.0184	.001723
2.537	11.590	9771.	9947	.9975	.9959	30.04	.0050	.001743
2.571	11.747	9903.	9959	.9981	.9969	30.08	0.0000	.001751
2.602	11.896	10021.	9973	.9987	.9979	30.11	0.0000	.001751
2.633	12.211	10295.	9979	.9990	.9984	30.13	0.0000	.001751
2.747	12.527	10579.	9986	.9993	.9989	30.14	0.0000	.001751
2.824	12.801	10877.	9990	.9995	.9992	30.15	0.0000	.001751
2.912	13.202	11214.	9995	.9997	.9996	30.17	0.0000	.001751
2.980	13.645	11512.	1.0004	1.0002	1.0003	30.19	0.0000	.001751
3.074	14.044	11840.	1.0004	1.0002	1.0003	30.19	0.0000	.001751
3.148	14.381	12124.	1.0001	1.0000	1.0001	30.18	0.0000	.001751
3.230	14.757	12427.	.9998	.9999	.9998	30.17	0.0000	.001751
3.313	15.138	12779.	.9998	.9999	.9998	30.17	0.0000	.001751
3.394	15.459	13034.	1.0000	1.0000	1.0000	30.18	0.0000	.001751
3.477	15.983	13391.	.9999	.9999	.9998	30.17	0.0000	.001751
3.567	16.295	13736.	.9997	.9999	.9998	30.17	0.0000	.001751
3.641	16.631	14021.	.9997	.9999	.9998	30.17	0.0000	.001751

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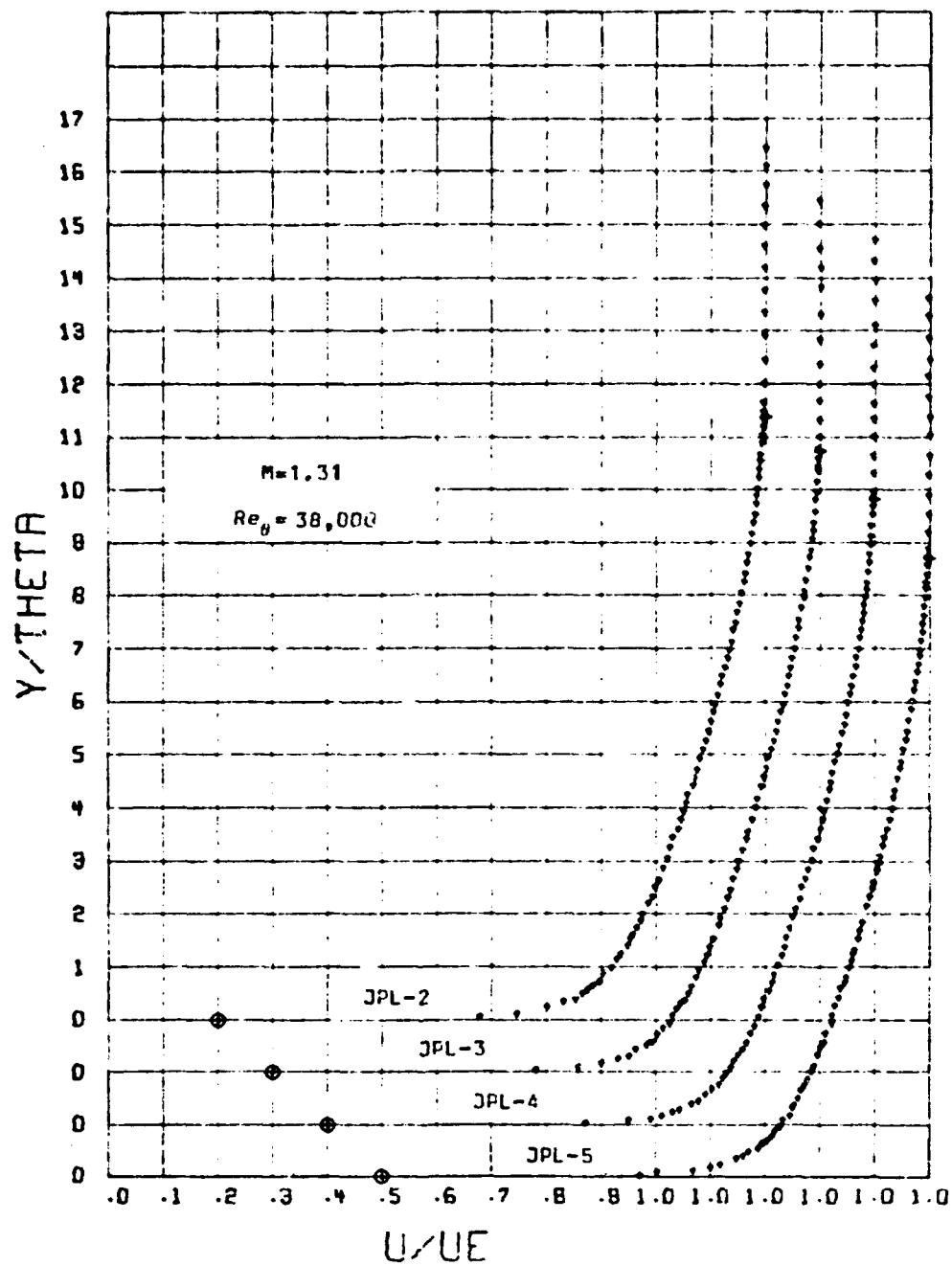


Figure A33. Mean Velocity Profiles.

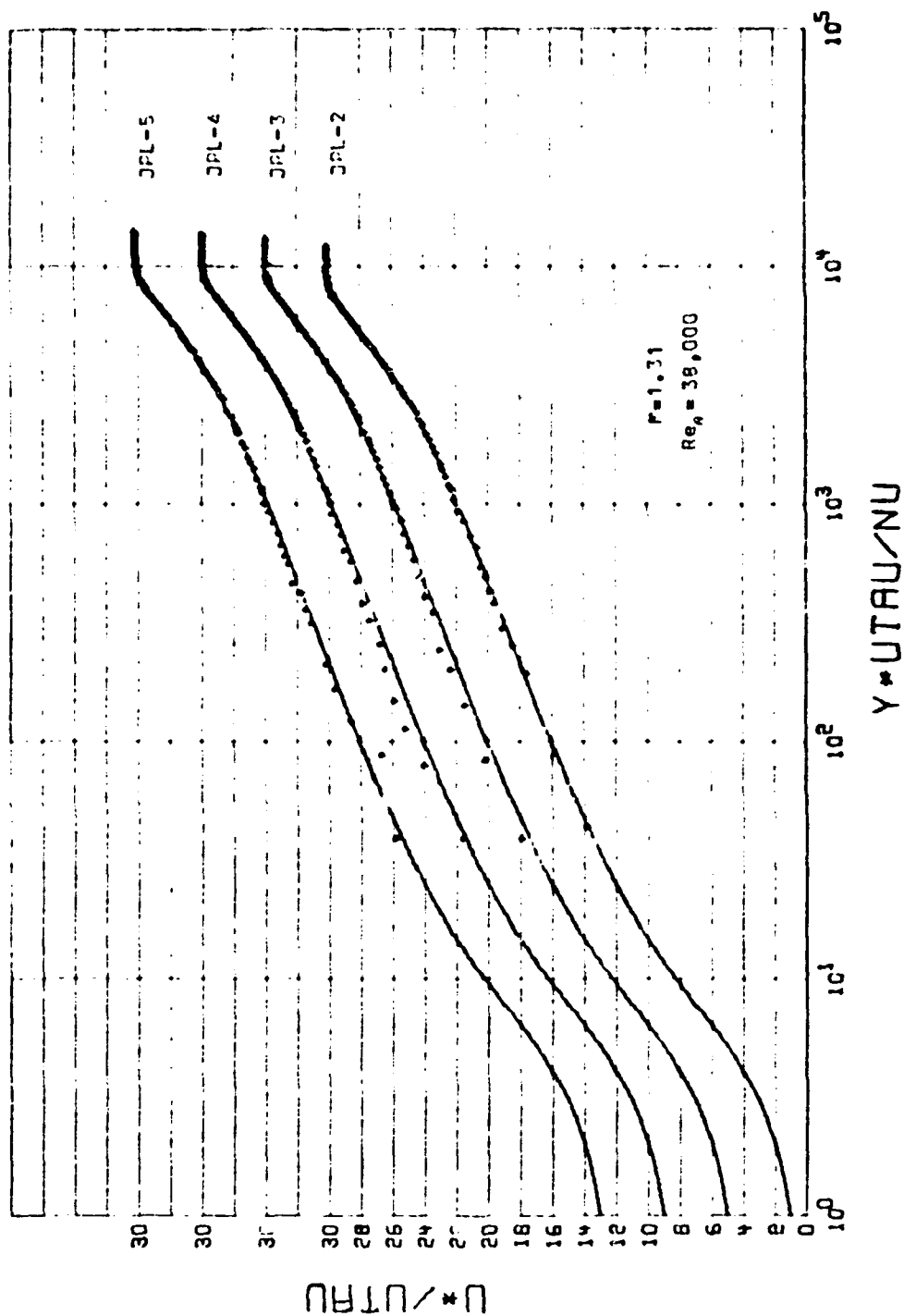


Figure A34. Van Orist Scaled Mean Velocity Profiles.

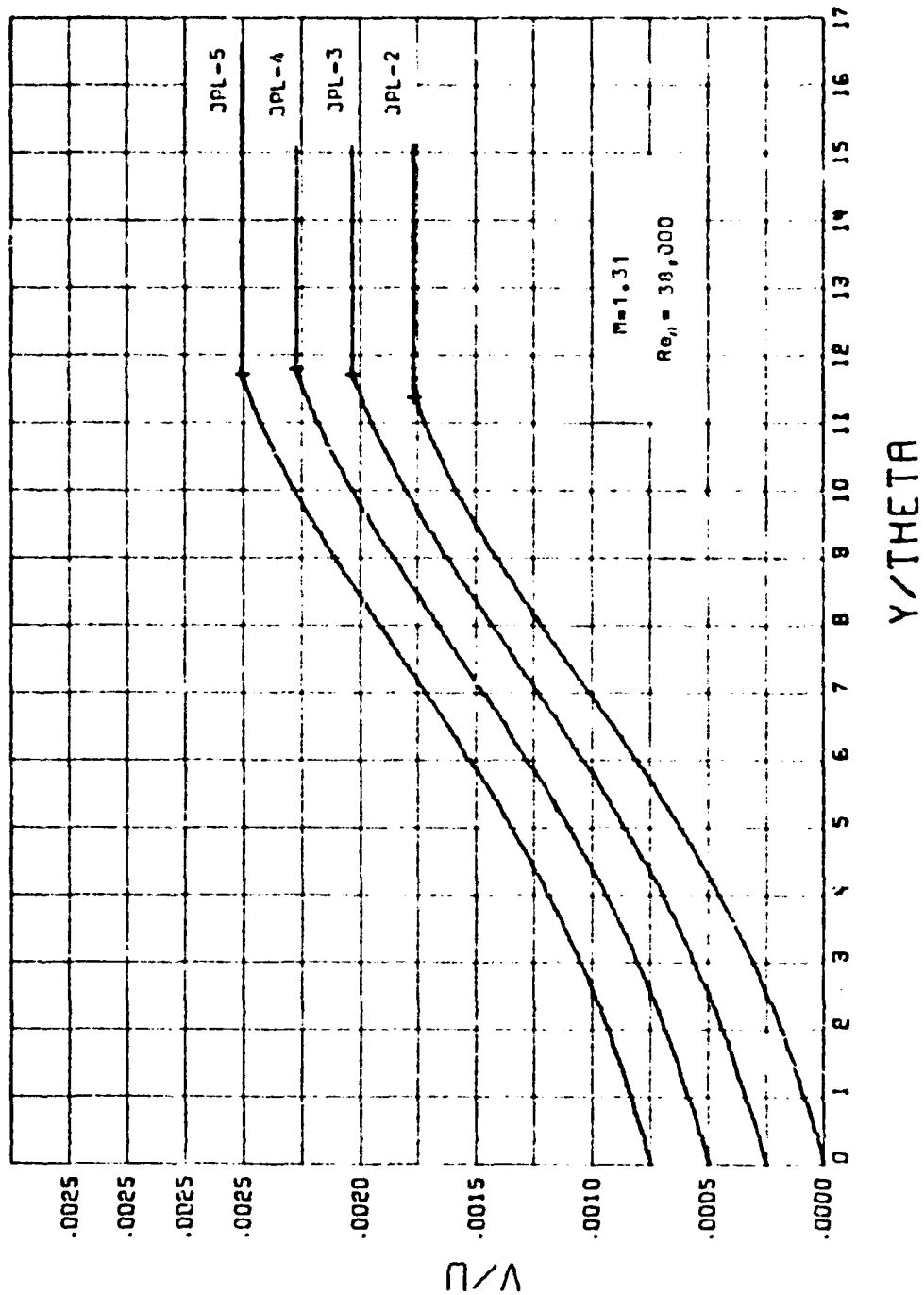


Figure A35. Normal Velocity Distribution.

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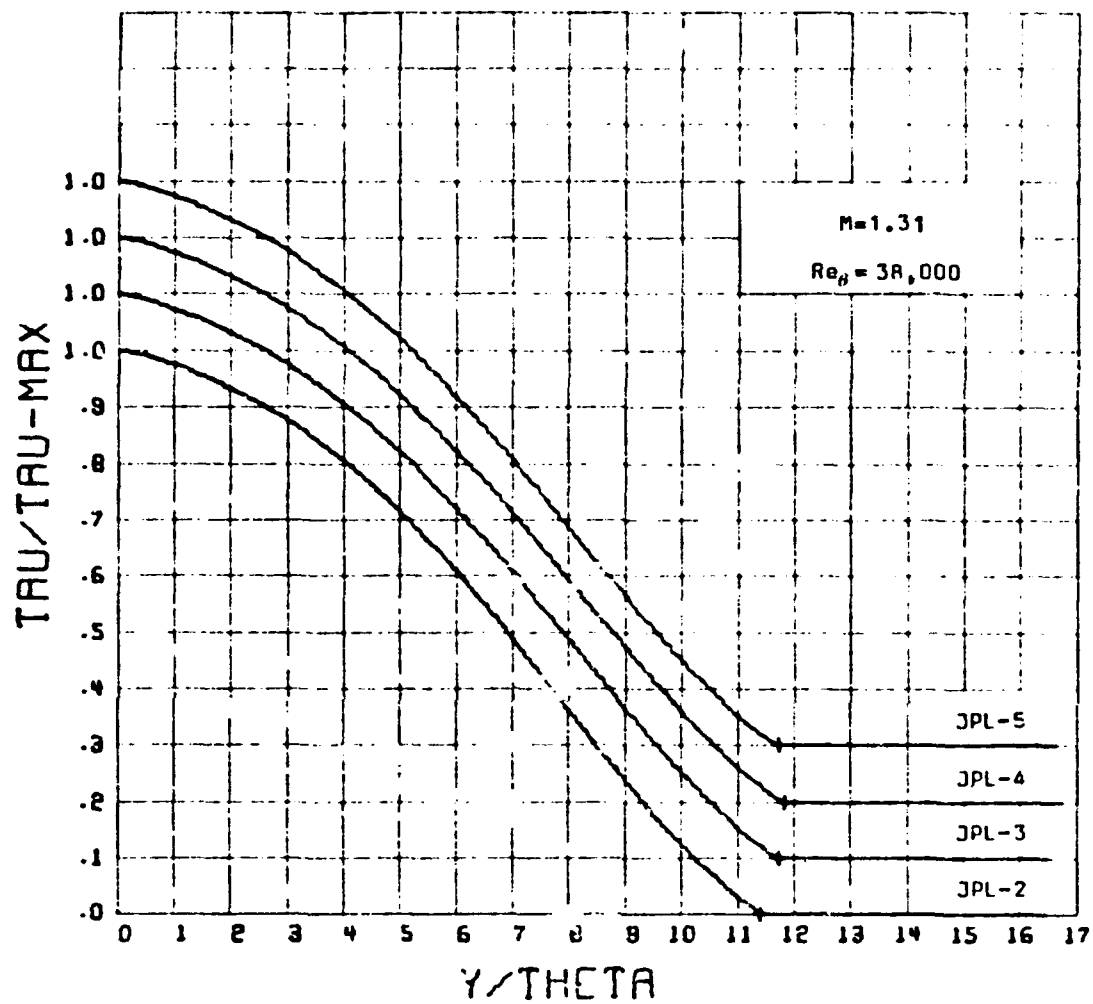


Figure A36. Shear Stress Distribution.

TABLE A13. DATA SUMMARY

PROFILE - JPL-2 - - - PITOT PRESSURE DATA
 FDGE MACH NO. = 2.1722 TOTAL PRESSURE = 9331E-05 N/MOO2
 X = 26.21 CM TOTAL TEMPERATURE = 378.65 DEG-K

Y (CM)	V/THETA	Y-PLUS	Y/NE	RM/RHOF	U/U	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	5449	0.0000	0.70	1.0000	0.00000
0.010	0.042	12.	0.2908	5436	0.3808	9.47	1.0000	0.00000
0.013	0.058	17.	0.3664	5427	0.4501	11.97	0.999	0.00001
0.017	0.077	24.	0.4178	5424	0.5067	13.44	0.999	0.00006
0.044	0.187	64.	0.4583	5408	0.5777	14.74	0.997	0.00012
0.052	0.219	84.	0.4709	5401	0.6045	15.74	0.977	0.00015
0.071	0.300	121.	0.4972	5374	0.6132	16.71	0.973	0.00022
0.082	0.348	151.	0.5095	5369	0.6357	16.56	0.954	0.00027
0.092	0.390	176.	0.5167	5364	0.6370	16.77	0.948	0.00029
0.094	0.377	178.	0.5161	5364	0.6415	17.01	0.943	0.00032
0.113	0.477	242.	0.5461	5357	0.6527	17.32	0.929	0.00034
0.139	0.647	340.	0.6418	5345	0.6578	17.49	0.916	0.00036
0.140	0.635	341.	0.6401	5343	0.6569	17.63	0.903	0.00036
0.141	0.634	342.	0.6391	5343	0.6564	17.66	0.893	0.00036
0.170	0.718	402.	0.6888	5321	0.6744	18.32	0.874	0.00041
0.187	0.793	439.	0.7244	5350	0.6837	18.37	0.854	0.00044
0.201	0.852	462.	0.7654	5308	0.6902	18.57	0.841	0.00044
0.217	0.913	481.	0.8004	5288	0.7030	18.81	0.830	0.00046
0.230	0.970	497.	0.8303	5268	0.7120	19.04	0.814	0.00046
0.250	1.023	513.	0.8591	5247	0.7179	19.31	0.799	0.00046
0.268	1.070	528.	0.8843	5226	0.7274	19.50	0.787	0.00046
0.284	1.112	542.	0.9073	5204	0.7339	19.69	0.783	0.00046
0.295	1.150	554.	0.9281	5182	0.7404	19.89	0.754	0.00046
0.312	1.184	571.	0.9416	5159	0.7429	20.16	0.740	0.00046
0.323	1.216	583.	0.9507	5134	0.7474	20.39	0.727	0.00046
0.340	1.243	595.	0.9560	5108	0.7535	20.49	0.722	0.00046
0.356	1.264	606.	0.9587	5082	0.7595	20.78	0.704	0.00046
0.370	1.281	615.	0.9597	5056	0.7647	20.91	0.692	0.00046
0.382	1.294	624.	0.9597	5030	0.7693	21.31	0.684	0.00046
0.394	1.304	632.	0.9587	5004	0.7702	21.25	0.672	0.00046
0.404	1.314	639.	0.9564	4978	0.7690	21.44	0.671	0.00046
0.418	1.323	645.	0.9530	4952	0.7674	21.66	0.659	0.00046
0.428	1.330	650.	0.9487	4926	0.7656	21.85	0.647	0.00046
0.438	1.336	654.	0.9434	4899	0.7626	22.10	0.630	0.00046
0.448	1.341	657.	0.9371	4872	0.7581	22.41	0.614	0.00046
0.458	1.345	660.	0.9297	4845	0.7526	22.64	0.600	0.00046
0.468	1.348	662.	0.9214	4818	0.7461	22.81	0.585	0.00046
0.478	1.350	664.	0.9121	4791	0.7386	22.91	0.570	0.00046
0.488	1.351	665.	0.9018	4764	0.7301	23.01	0.554	0.00046
0.498	1.351	666.	0.8905	4737	0.7206	23.01	0.538	0.00046
0.508	1.350	667.	0.8782	4710	0.7101	23.01	0.522	0.00046
0.518	1.348	668.	0.8649	4683	0.6986	23.01	0.506	0.00046
0.528	1.345	669.	0.8506	4656	0.6861	23.01	0.490	0.00046
0.538	1.341	670.	0.8353	4629	0.6726	23.01	0.474	0.00046
0.548	1.336	671.	0.8190	4602	0.6581	23.01	0.458	0.00046
0.558	1.329	672.	0.8017	4575	0.6426	23.01	0.442	0.00046
0.568	1.320	673.	0.7834	4548	0.6261	23.01	0.426	0.00046
0.578	1.309	674.	0.7641	4521	0.6086	23.01	0.410	0.00046
0.588	1.296	675.	0.7438	4494	0.5901	23.01	0.394	0.00046
0.598	1.281	676.	0.7225	4467	0.5706	23.01	0.378	0.00046
0.608	1.264	677.	0.6992	4440	0.5501	23.01	0.362	0.00046
0.618	1.245	678.	0.6739	4413	0.5286	23.01	0.346	0.00046
0.628	1.224	679.	0.6466	4386	0.5061	23.01	0.330	0.00046
0.638	1.201	680.	0.6173	4359	0.4826	23.01	0.314	0.00046
0.648	1.176	681.	0.5860	4332	0.4581	23.01	0.298	0.00046
0.658	1.149	682.	0.5527	4305	0.4326	23.01	0.282	0.00046
0.668	1.120	683.	0.5174	4278	0.4061	23.01	0.266	0.00046
0.678	1.089	684.	0.4801	4251	0.3786	23.01	0.250	0.00046
0.688	1.056	685.	0.4408	4224	0.3501	23.01	0.234	0.00046
0.698	1.021	686.	0.3995	4197	0.3206	23.01	0.218	0.00046
0.708	0.984	687.	0.3562	4170	0.2901	23.01	0.202	0.00046
0.718	0.945	688.	0.3109	4143	0.2586	23.01	0.186	0.00046
0.728	0.904	689.	0.2636	4116	0.2261	23.01	0.170	0.00046
0.738	0.861	690.	0.2143	4089	0.1926	23.01	0.154	0.00046
0.748	0.816	691.	0.1630	4062	0.1581	23.01	0.138	0.00046
0.758	0.769	692.	0.1097	4035	0.1226	23.01	0.122	0.00046
0.768	0.720	693.	0.0544	4008	0.0861	23.01	0.106	0.00046
0.778	0.669	694.	0.0000	3981	0.0486	23.01	0.090	0.00046

ORIGINAL PAGE IS
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TABLE A13. (CONT.)

Y (CH)	V/THEA	V-PLUS	M/ME	ICONT.1	U/UE	II-PLUS	TAU/TAU-MAX	V/U
1.131	4.778	1394.	.7778	.8202	.8588	23.49	.8027	.000429
1.177	4.950	1444.	.7813	.8277	.8614	23.57	.7906	.000467
1.220	5.154	1504.	.7905	.8391	.8691	23.78	.7756	.000570
1.264	5.314	1581.	.7955	.8529	.8717	23.90	.7635	.000735
1.316	5.518	1610.	.8009	.8688	.8756	24.02	.7476	.000778
1.341	5.663	1652.	.8070	.8843	.8799	24.14	.7360	.000908
1.373	5.840	1704.	.8119	.8999	.8833	24.27	.7215	.000947
1.416	6.047	1748.	.8199	.9166	.8888	24.44	.7097	.000987
1.459	6.287	1798.	.8254	.9349	.8927	24.57	.6960	.000919
1.502	6.561	1855.	.8304	.9547	.8961	24.68	.6826	.000944
1.532	6.873	1909.	.8367	.9764	.8994	24.81	.6686	.000990
1.573	7.224	1974.	.8418	.9999	.9039	24.93	.6506	.001030
1.612	7.611	2045.	.8469	.9713	.9071	25.04	.6349	.001070
1.650	8.029	2122.	.8528	.9559	.9112	25.17	.6162	.001118
1.687	8.477	2202.	.8599	.9422	.9145	25.34	.6005	.001157
1.729	8.954	2284.	.8642	.9308	.9187	25.41	.5873	.001190
1.770	9.464	2392.	.8702	.9205	.9227	25.54	.5664	.001242
1.845	10.018	2508.	.8820	.9090	.9303	25.79	.5291	.001334
1.911	10.611	2655.	.8978	.8934	.9340	26.01	.5090	.001383
1.958	11.240	2813.	.9125	.8724	.9369	26.01	.4881	.001434
2.008	11.904	2980.	.9255	.8474	.9399	26.11	.4710	.001475
2.078	12.604	3156.	.9375	.8113	.9426	26.20	.4567	.001509
2.113	13.344	3342.	.9484	.7736	.9442	26.42	.4177	.001603
2.160	14.122	3542.	.9572	.7347	.9459	26.54	.3845	.001653
2.213	14.949	3757.	.9649	.6932	.9472	26.65	.3721	.001710
2.260	15.824	3987.	.9719	.6499	.9481	26.72	.3599	.001739
2.324	16.746	4242.	.9785	.6041	.9481	26.82	.3390	.001788
2.385	17.714	4512.	.9845	.5569	.9484	26.93	.3177	.001838
2.440	18.728	4797.	.9895	.5088	.9479	27.05	.3004	.001878
2.493	19.789	5097.	.9945	.4600	.9475	27.17	.2852	.001959
2.542	20.894	5412.	.9977	.4113	.9463	27.26	.2662	.002003
2.586	22.044	5742.	.9995	.3626	.9444	27.33	.2290	.002042
2.616	23.248	6087.	.9995	.3137	.9421	27.43	.2024	.002103
2.659	24.506	6447.	.9985	.2645	.9413	27.50	.1929	.002125
2.702	25.818	6822.	.9970	.2157	.9413	27.57	.1755	.002164
2.747	27.182	7212.	.9948	.1674	.9409	27.63	.1580	.002204
2.793	28.599	7617.	.9913	.1193	.9408	27.69	.1404	.002244
2.840	30.062	8037.	.9865	.0713	.9405	27.75	.1277	.002272
2.888	31.572	8482.	.9803	.0240	.9408	27.83	.0547	.002337
2.930	33.128	8942.	.9728	.0045	.9418	27.96	.0879	.002362
2.977	34.740	9417.	.9643	.0045	.9430	28.00	.0712	.002399
3.020	36.406	9907.	.9548	.0000	.9444	28.05	.0606	.002432
3.068	38.128	10412.	.9445	.0000	.9465	28.06	.0518	.002472
3.112	39.906	10932.	.9334	.0042	.9485	28.03	.0395	.002570
3.151	41.740	11467.	.9218	.0042	.9497	28.03	.0271	.002617
3.191	43.628	12017.	.9095	.0043	.9508	28.07	.0184	.002621
3.220	45.570	12582.	.8968	.0000	.9518	28.07	.0062	.002643
3.250	47.562	13162.	.8834	.0000	.9527	28.08	0.0000	.002657
3.280	49.604	13757.	.8695	.0000	.9534	28.09	0.0000	.002657
3.309	51.696	14367.	.8552	.0000	.9537	28.10	0.0000	.002657
3.339	53.838	14992.	.8405	.0000	.9537	28.12	0.0000	.002657
3.367	56.030	15632.	.8255	.0000	.9534	28.14	0.0000	.002657
3.394	58.272	16287.	.8100	.0000	.9534	28.15	0.0000	.002657
3.422	60.564	16957.	.7940	.0000	.9534	28.15	0.0000	.002657
3.450	62.906	17642.	.7775	.0000	.9534	28.15	0.0000	.002657
3.478	65.298	18342.	.7605	.0000	.9534	28.15	0.0000	.002657
3.505	67.740	19057.	.7430	.0000	.9534	28.15	0.0000	.002657
3.534	70.232	19787.	.7250	.0000	.9534	28.15	0.0000	.002657
3.564	72.774	20532.	.7065	.0000	.9534	28.15	0.0000	.002657
3.594	75.366	21292.	.6875	.0000	.9534	28.15	0.0000	.002657
3.624	77.998	22067.	.6680	.0000	.9534	28.15	0.0000	.002657
3.654	80.670	22857.	.6480	.0000	.9534	28.15	0.0000	.002657
3.684	83.382	23662.	.6275	.0000	.9534	28.15	0.0000	.002657
3.714	86.134	24482.	.6065	.0000	.9534	28.15	0.0000	.002657
3.744	88.926	25317.	.5850	.0000	.9534	28.15	0.0000	.002657
3.774	91.758	26167.	.5630	.0000	.9534	28.15	0.0000	.002657
3.804	94.630	27032.	.5405	.0000	.9534	28.15	0.0000	.002657
3.834	97.542	27912.	.5175	.0000	.9534	28.15	0.0000	.002657
3.864	100.494	28807.	.4940	.0000	.9534	28.15	0.0000	.002657
3.894	103.486	29717.	.4700	.0000	.9534	28.15	0.0000	.002657
3.924	106.518	30642.	.4455	.0000	.9534	28.15	0.0000	.002657
3.954	109.590	31582.	.4205	.0000	.9534	28.15	0.0000	.002657
3.984	112.702	32537.	.3950	.0000	.9534	28.15	0.0000	.002657
4.014	115.854	33507.	.3690	.0000	.9534	28.15	0.0000	.002657
4.044	119.046	34492.	.3425	.0000	.9534	28.15	0.0000	.002657
4.074	122.278	35492.	.3155	.0000	.9534	28.15	0.0000	.002657
4.104	125.550	36507.	.2880	.0000	.9534	28.15	0.0000	.002657
4.134	128.862	37537.	.2600	.0000	.9534	28.15	0.0000	.002657
4.164	132.214	38582.	.2315	.0000	.9534	28.15	0.0000	.002657
4.194	135.606	39642.	.2025	.0000	.9534	28.15	0.0000	.002657
4.224	139.038	40717.	.1730	.0000	.9534	28.15	0.0000	.002657
4.254	142.510	41807.	.1430	.0000	.9534	28.15	0.0000	.002657
4.284	146.022	42912.	.1125	.0000	.9534	28.15	0.0000	.002657
4.314	149.574	44032.	.0815	.0000	.9534	28.15	0.0000	.002657
4.344	153.166	45167.	.0500	.0000	.9534	28.15	0.0000	.002657
4.374	156.798	46317.	.0180	.0000	.9534	28.15	0.0000	.002657
4.404	160.470	47482.	.0000	.0000	.9534	28.15	0.0000	.002657
4.434	164.182	48662.	.0000	.0000	.9534	28.15	0.0000	.002657
4.464	167.934	49857.	.0000	.0000	.9534	28.15	0.0000	.002657
4.494	171.726	51067.	.0000	.0000	.9534	28.15	0.0000	.002657
4.524	175.558	52292.	.0000	.0000	.9534	28.15	0.0000	.002657
4.554	179.430	53532.	.0000	.0000	.9534	28.15	0.0000	.002657
4.584	183.342	54787.	.0000	.0000	.9534	28.15	0.0000	.002657
4.614	187.294	56057.	.0000	.0000	.9534	28.15	0.0000	.002657
4.644	191.286	57342.	.0000	.0000	.9534	28.15	0.0000	.002657
4.674	195.318	58642.	.0000	.0000	.9534	28.15	0.0000	.002657
4.704	199.390	59957.	.0000	.0000	.9534	28.15	0.0000	.002657
4.734	203.502	61287.	.0000	.0000	.9534	28.15	0.0000	.002657
4.764	207.654	62632.	.0000	.0000	.9534	28.15	0.0000	.002657
4.794	211.846	63992.	.0000	.0000	.9534	28.15	0.0000	.002657
4.824	216.078	65367.	.0000	.0000	.9534	28.15	0.0000	.002657
4.854	220.350	66757.	.0000	.0000	.9534	28.15	0.0000	.002657
4.884	224.662	68162.	.0000	.0000	.9534	28.15	0.0000	.002657
4.914	229.014	69582.	.0000	.0000	.9534	28.15	0.0000	.002657
4.944	233.406	71017.	.0000	.0000	.9534	28.15	0.0000	.002657
4.974	237.838	72477.	.0000	.0000	.9534	28.15	0.0000	.002657
5.004	242.310	73952.	.0000	.0000	.9534	28.15	0.0000	.002657
5.034	246.822	75442.	.0000	.0000	.9534	28.15	0.0000	.002657
5.064	251.374	76947.	.0000	.0000	.9534	28.15	0.0000	.002657
5.094	255.966	78467.	.0000	.0000	.9534	28.15	0.0000	.002657
5.124	260.598	79992.	.0000	.0000	.9534	28.15	0.0000	.002657
5.154	265.270	81532.	.0000	.0000	.9534	28.15	0.0000	.002657
5.184	269.982	83087.	.0000	.0000	.9534	28.15	0.0000	.002657
5.214	274.734	84657.	.0000	.0000	.9534	28.15	0.0000	.002657
5.244	279.526	86242.	.0000	.0000	.9534	28.15	0.0000	.002657
5.274	284.358	87842.	.0000	.0000	.9534	28.15	0.0000	.002657
5.304	289.230	89457.	.0000	.0000	.9534	28.15	0.0000	.002657
5.334	294.142	91087.	.0000	.0000	.9534	28.15	0.0000	.002657
5.364	299.094	92732.	.0000	.0000	.9534	28.15	0.0000	.002657
5.394	304.086	94392.	.0000	.0000	.9534	28.15	0.0000	.002657
5.424	309.118	96067.	.0000	.0000	.9534	28.15	0.0000	.002657
5.454	314.190	97757.	.0000	.0000	.9534	28.15	0.0000	.002657
5.484	319.302	99462.	.0000	.0000	.9534	28.15	0.0000	.002657
5.514	324.454	101182.	.0000	.0000	.9534	28.15	0.0000	.002657
5.544	329.646	102917.	.0000	.0000	.9534	28.15	0.0000	.002657
5.574	334.878	104667.	.0000	.0000	.9534	28.15	0.0000	.002657
5.604	340.150	106432.	.0000	.0000	.9534	28.15	0.0000	.002657
5.634	345.462	108212.	.0000	.0000	.9534	28.15	0.0000	.002657
5.664	350.814	110007.	.0000	.0000	.9534	28.15	0.0000	.002657
5.694	356.206	1						

TABLE A13. (CONT.)
PROFILE - JPL-3 - - - PITNT PRESSURE DATA

TOTAL PRESSURE = .9331E+05 N/M²
 TOTAL TEMPERATURE = 311.07 DEG-K
 X = -7.62 CM
 FROGGE MACH NO. = 2.1666

EQU = 550.76 M/SEC
 RE-TWETA-STAR = 73390.
 DELTA STAR = .7595 CM
 TWETA = .2435 CM
 NIPALL = 1.7470 CM002/SEC
 W = 3.119

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LEAST SQUARE FIT PARAMETERS
UTAIN 21.6245 W/SEC
C = .00169
YMAX = 3.073 CM
YMIN = .147 CM
DZ = .0175
NFLTA = 3.2535 CM

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Y (CM)	Y/THETA	Y-PLUS	M/NE	RMR/RMFE	U/IE	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0	0.0000	.5461	0.0000	0.00	1.000	0.000000
0.010	.041	12	3.137	.6078	.4081	10.44	1.0000	0.000000
0.015	.062	19	3.885	.6708	.4727	12.34	.9988	0.000002
0.020	.084	26	4.694	.7420	.5301	13.94	.9962	0.000006
0.025	.106	33	5.500	.8100	.5843	15.46	.9925	0.000011
0.030	.129	40	6.306	.8769	.6345	16.76	.9873	0.000017
0.035	.151	48	7.108	.9432	.6827	17.84	.9803	0.000023
0.040	.174	56	7.904	.9983	.7284	18.77	.9716	0.000031
0.045	.196	64	8.694	.9994	.7717	19.57	.9617	0.000039
0.050	.219	72	9.478	.9994	.8130	20.24	.9504	0.000047
0.055	.241	80	10.256	.9994	.8527	20.79	.9377	0.000055
0.060	.264	88	11.028	.9994	.8906	21.22	.9234	0.000063
0.065	.286	96	11.794	.9994	.9267	21.54	.9077	0.000071
0.070	.309	104	12.554	.9994	.9613	22.30	.8907	0.000079
0.075	.331	112	13.308	.9994	.9940	22.74	.8723	0.000087
0.080	.354	120	14.056	.9994	1.0252	22.93	.8524	0.000095
0.085	.376	128	14.800	.9994	1.0547	22.98	.8311	0.000103
0.090	.399	136	15.538	.9994	1.0824	22.94	.8084	0.000111
0.095	.421	144	16.272	.9994	1.1084	22.74	.7843	0.000119
0.100	.444	152	17.000	.9994	1.1327	22.40	.7588	0.000127
0.105	.466	160	17.724	.9994	1.1554	21.93	.7320	0.000135
0.110	.489	168	18.444	.9994	1.1765	21.34	.7041	0.000143
0.115	.511	176	19.160	.9994	1.1960	20.64	.6750	0.000151
0.120	.534	184	19.872	.9994	1.2140	19.84	.6447	0.000159
0.125	.556	192	20.580	.9994	1.2304	18.94	.6132	0.000167
0.130	.579	200	21.284	.9994	1.2453	17.94	.5804	0.000175
0.135	.601	208	21.984	.9994	1.2587	16.94	.5463	0.000183
0.140	.624	216	22.680	.9994	1.2706	15.94	.5110	0.000191
0.145	.646	224	23.372	.9994	1.2811	14.94	.4744	0.000199
0.150	.669	232	24.060	.9994	1.2902	13.94	.4364	0.000207
0.155	.691	240	24.744	.9994	1.2979	12.94	.3970	0.000215
0.160	.714	248	25.424	.9994	1.3052	11.94	.3562	0.000223
0.165	.736	256	26.100	.9994	1.3111	10.94	.3140	0.000231
0.170	.759	264	26.772	.9994	1.3157	9.94	.2704	0.000239
0.175	.781	272	27.440	.9994	1.3190	8.94	.2254	0.000247
0.180	.804	280	28.104	.9994	1.3210	7.94	.1790	0.000255
0.185	.826	288	28.764	.9994	1.3227	6.94	.1312	0.000263
0.190	.849	296	29.420	.9994	1.3240	5.94	.0820	0.000271
0.195	.871	304	30.072	.9994	1.3249	4.94	.0314	0.000279
0.200	.894	312	30.720	.9994	1.3254	3.94	.0000	0.000287

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TABLE A13. (CONT.)
H/RE RND/PHNF

Y (%)	Y/THETA	Y-PLUS	H/RE	RND/PHNF	U/HF	I-PLUS	TAU/TAU-MAX	V/U
1.375	5.668	1.85	.8088	.8416	.8705	26.22	.7392	.000106
1.417	5.820	1.736	.8150	.8476	.8852	26.40	.7210	.000843
1.463	6.007	1.702	.8205	.8517	.8921	26.52	.7051	.000844
1.510	6.200	1.650	.8275	.8570	.8939	26.43	.6882	.000842
1.566	6.362	1.595	.8332	.8612	.8978	26.81	.6747	.000543
1.565	6.550	1.554	.8379	.8668	.9010	26.91	.6566	.001000
1.645	6.764	2.016	.8450	.8707	.9058	25.07	.6371	.001058
1.676	6.804	2.053	.8500	.8761	.9002	25.14	.6252	.001068
1.723	7.076	2.111	.8548	.8793	.9137	25.32	.6044	.001135
1.771	7.275	2.170	.8606	.8873	.9162	25.40	.5848	.001154
1.806	7.410	2.211	.8661	.8866	.9108	25.52	.5737	.001218
1.859	7.635	2.278	.8730	.8929	.9243	25.67	.5504	.001274
1.899	7.801	2.327	.8784	.8963	.9278	25.78	.5331	.001316
1.928	7.950	2.374	.8818	.9000	.9209	25.84	.5168	.001356
1.984	8.154	2.431	.8886	.9065	.9209	26.00	.5054	.001407
2.036	8.354	2.492	.8958	.9103	.9388	26.15	.4747	.001557
2.070	8.500	2.536	.9002	.9139	.9416	26.24	.4589	.001545
2.113	8.678	2.589	.9067	.9193	.9457	26.38	.4395	.001541
2.166	8.884	2.651	.9098	.9218	.9476	26.44	.4171	.001594
2.222	9.043	2.698	.9111	.9233	.9516	26.58	.4000	.001635
2.280	9.283	2.759	.9236	.9333	.9540	26.72	.3738	.001696
2.302	9.455	2.821	.9279	.9369	.9586	26.81	.3550	.001740
2.338	9.601	2.864	.9323	.9404	.9612	26.90	.3300	.001777
2.404	9.872	2.945	.9392	.9465	.9654	27.04	.3096	.001845
2.447	10.049	2.998	.9437	.9499	.9677	27.12	.2905	.001849
2.494	10.242	3.056	.9487	.9566	.9710	27.23	.2699	.001937
2.543	10.446	3.116	.9532	.9584	.9736	27.32	.2483	.001964
2.583	10.607	3.164	.9589	.9636	.9769	27.43	.2315	.002024
2.629	10.852	3.238	.9627	.9688	.9788	27.50	.2063	.002041
2.678	11.082	3.306	.9661	.9698	.9810	27.57	.1833	.002123
2.741	11.259	3.359	.9717	.9767	.9842	27.68	.1650	.002173
2.788	11.482	3.417	.9748	.9776	.9840	27.74	.1476	.002214
2.832	11.670	3.469	.9777	.9800	.9876	27.80	.1308	.002251
2.879	11.828	3.520	.9816	.9836	.9898	27.88	.1129	.002291
2.931	12.076	3.591	.9845	.9862	.9903	27.89	.0947	.002332
2.984	12.172	3.631	.9860	.9873	.9922	27.96	.0833	.002357
3.004	12.339	3.681	.9887	.9880	.9926	27.97	.0697	.002367
3.043	12.516	3.734	.9884	.9894	.9934	28.01	.0558	.002418
3.073	12.630	3.765	.9894	.9904	.9942	28.03	.0476	.002456
3.126	12.836	3.829	.9919	.9927	.9954	28.07	.0321	.002475
3.169	13.017	3.883	.9930	.9937	.9962	28.10	.0201	.002537
3.210	13.142	3.921	.9936	.9942	.9965	28.11	.0121	.002514
3.231	13.267	3.958	.9937	.9943	.9965	28.11	.0044	.002531
3.264	13.413	4.002	.9942	.9948	.9964	28.12	0.0000	.002541
3.306	13.560	4.048	.9947	.9946	.9979	28.16	0.0000	.002541
3.369	13.724	4.075	.9971	.9974	.9984	28.17	0.0000	.002541
3.401	13.866	4.117	.9973	.9975	.9985	28.18	0.0000	.002541
3.437	14.117	4.212	.9984	.9984	.9991	28.20	0.0000	.002541
3.470	14.253	4.252	.9988	.9989	.9993	28.21	0.0000	.002541
3.516	14.447	4.288	.9995	.9994	.9997	28.22	0.0000	.002541
3.556	14.597	4.345	.9999	.9999	.9999	28.23	0.0000	.002541
3.589	14.738	4.397	.9999	.9999	.9999	28.23	0.0000	.002541
3.627	14.894	4.444	.9998	.9998	.9999	28.22	0.0000	.002541
3.659	15.051	4.490	1.0002	1.0002	1.0001	28.23	0.0000	.002541
3.718	15.270	4.556	1.0004	1.0007	1.0004	28.24	0.0000	.002541

TABLE A13. (CONT.)
PROFILE - JPL-4 -- - PITOT PRESSURE DATA

EDGE MACH NO.= 2.1642				TOTAL PRESSURE=.9331E+05 N/M ²				TOTAL TEMPERATURE= 309.86 DEG-K				DELTA STAR=.7967 CM				T-META=.2555 CM				M= 3.117			
X= 0.00 CM				RE-DELTA-STAR= 77000.				RE-TMETA= 24690.				DELTA STAR= 7967 CM				T-META=.2555 CM				M= 3.117			
LEAST SQUARE FIT PARAMETERS				CF= .001433				YMAX= 3.226 CM				PI= .6194				DELTA= 3.4195 CM							
CHICKS=.0723E-05												YMIN= .152 CM											
Y (CM)	Y/TMETA	Y-PLUS	M/ME	RM/RMDE	U/U	U-PLUS	TAU/TAU-MAX	V/U	Y (CM)	Y/TMETA	Y-PLUS	M/ME	RM/RMDE	U/U	U-PLUS	TAU/TAU-MAX	V/U						
0.000	0.000	0.	0.0000	.5467	0.0000	0.00	1.0000	0.000000	0.000	0.000	0.	0.0000	.5467	0.0000	0.00	1.0000	0.000000						
.010	.039	12.	.2958	.5864	.3864	10.11	1.0000	0.000000	.010	.039	12.	.2958	.5864	.3864	10.11	1.0000	0.000000						
.020	.078	13.	.3181	.5924	.4132	10.83	.9999	0.000000	.020	.078	13.	.3181	.5924	.4132	10.83	.9999	0.000000						
.030	.117	50.	.4409	.6368	.5536	14.67	.9986	.000010	.030	.117	50.	.4409	.6368	.5536	14.67	.9986	.000010						
.040	.156	74.	.4782	.6508	.5940	15.81	.9975	.000016	.040	.156	74.	.4782	.6508	.5940	15.81	.9975	.000016						
.050	.195	89.	.4984	.6580	.6108	16.28	.9967	.000120	.050	.195	89.	.4984	.6580	.6108	16.28	.9967	.000120						
.060	.234	111.	.5165	.6676	.6321	16.89	.9953	.000027	.060	.234	111.	.5165	.6676	.6321	16.89	.9953	.000027						
.070	.273	143.	.5342	.6760	.6497	17.39	.9933	.000036	.070	.273	143.	.5342	.6760	.6497	17.39	.9933	.000036						
.080	.312	177.	.5475	.6824	.6627	17.77	.9910	.000046	.080	.312	177.	.5475	.6824	.6627	17.77	.9910	.000046						
.090	.351	188.	.5587	.6882	.6735	18.08	.9892	.000049	.090	.351	188.	.5587	.6882	.6735	18.08	.9892	.000049						
.100	.390	210.	.5654	.6914	.6789	18.27	.9874	.000056	.100	.390	210.	.5654	.6914	.6789	18.27	.9874	.000056						
.110	.429	226.	.5700	.6920	.6801	18.45	.9874	.000060	.110	.429	226.	.5700	.6920	.6801	18.45	.9874	.000060						
.120	.468	245.	.5781	.6942	.6819	18.62	.9859	.000066	.120	.468	245.	.5781	.6942	.6819	18.62	.9859	.000066						
.130	.507	270.	.5874	.7031	.7005	18.87	.9839	.000074	.130	.507	270.	.5874	.7031	.7005	18.87	.9839	.000074						
.140	.546	307.	.5955	.7075	.7040	19.09	.9808	.000085	.140	.546	307.	.5955	.7075	.7040	19.09	.9808	.000085						
.150	.585	346.	.6024	.7113	.7145	19.28	.9791	.000091	.150	.585	346.	.6024	.7113	.7145	19.28	.9791	.000091						
.160	.624	351.	.6108	.7158	.7219	19.50	.9769	.000099	.160	.624	351.	.6108	.7158	.7219	19.50	.9769	.000099						
.170	.663	387.	.6154	.7185	.7263	19.63	.9736	.000111	.170	.663	387.	.6154	.7185	.7263	19.63	.9736	.000111						
.180	.702	405.	.6241	.7219	.7347	19.84	.9720	.000117	.180	.702	405.	.6241	.7219	.7347	19.84	.9720	.000117						
.190	.741	458.	.6303	.7249	.7394	20.02	.9669	.000135	.190	.741	458.	.6303	.7249	.7394	20.02	.9669	.000135						
.200	.780	505.	.6441	.7349	.7514	20.34	.9619	.000151	.200	.780	505.	.6441	.7349	.7514	20.34	.9619	.000151						
.210	.819	552.	.6497	.7381	.7563	20.53	.9549	.000168	.210	.819	552.	.6497	.7381	.7563	20.53	.9549	.000168						
.220	.858	587.	.6564	.7420	.7620	20.70	.9531	.000180	.220	.858	587.	.6564	.7420	.7620	20.70	.9531	.000180						
.230	.897	615.	.6619	.7465	.7684	20.89	.9475	.000190	.230	.897	615.	.6619	.7465	.7684	20.89	.9475	.000190						
.240	.936	687.	.6701	.7503	.7703	21.05	.9412	.000218	.240	.936	687.	.6701	.7503	.7703	21.05	.9412	.000218						
.250	.975	722.	.6740	.7537	.7737	21.17	.9349	.000235	.250	.975	722.	.6740	.7537	.7737	21.17	.9349	.000235						
.260	.014	778.	.6848	.7593	.7859	21.42	.9296	.000255	.260	.014	778.	.6848	.7593	.7859	21.42	.9296	.000255						
.270	.023	859.	.6909	.7631	.7909	21.57	.9233	.000274	.270	.023	859.	.6909	.7631	.7909	21.57	.9233	.000274						
.280	.032	922.	.6977	.7674	.7965	21.74	.9184	.000290	.280	.032	922.	.6977	.7674	.7965	21.74	.9184	.000290						
.290	.041	957.	.7050	.7752	.8026	21.78	.9126	.000306	.290	.041	957.	.7050	.7752	.8026	21.78	.9126	.000306						
.300	.050	1000.	.7148	.7820	.8084	22.05	.9062	.000331	.300	.050	1000.	.7148	.7820	.8084	22.05	.9062	.000331						
.310	.059	1052.	.7211	.7874	.8111	22.19	.9003	.000352	.310	.059	1052.	.7211	.7874	.8111	22.19	.9003	.000352						
.320	.068	1100.	.7273	.7917	.8152	22.32	.8940	.000376	.320	.068	1100.	.7273	.7917	.8152	22.32	.8940	.000376						
.330	.077	1142.	.7351	.7964	.8201	22.47	.8877	.000409	.330	.077	1142.	.7351	.7964	.8201	22.47	.8877	.000409						
.340	.086	1223.	.7428	.8013	.8262	22.66	.8802	.000430	.340	.086	1223.	.7428	.8013	.8262	22.66	.8802	.000430						
.350	.095	1286.	.7498	.8061	.8321	22.85	.8733	.000451	.350	.095	1286.	.7498	.8061	.8321	22.85	.8733	.000451						
.360	.104	1342.	.7564	.8104	.8373	23.01	.8673	.000473	.360	.104	1342.	.7564	.8104	.8373	23.01	.8673	.000473						
.370	.113	1400.	.7619	.8151	.8425	23.17	.8611	.000526	.370	.113	1400.	.7619	.8151	.8425	23.17	.8611	.000526						
.380	.122	1460.	.7679	.8198	.8476	23.30	.8555	.000555	.380	.122	1460.	.7679	.8198	.8476	23.30	.8555	.000555						
.390	.131	1520.	.7740	.8247	.8526	23.47	.8500	.000581	.390	.131	1520.	.7740	.8247	.8526	23.47	.8500	.000581						
.400	.140	1580.	.7807	.8290	.8576	23.74	.8444	.000641	.400	.140	1580.	.7807	.8290	.8576	23.74	.8444	.000641						

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OF POOR QUALITY

TABLE A13. (CONT.)

Y (CM)	Y/THETA	Y-PLUS	W/E	RMG/RMDF	U/HF	U-PLUS	TAU/TAU-MAX	V/U
1.284	5.024	1585.	.7851	.8261	.8637	23.44	.7833	.000669
1.311	5.130	1618.	.7883	.8284	.8661	23.92	.7755	.000690
1.344	5.249	1642.	.7935	.8321	.8698	24.04	.7651	.000718
1.382	5.400	1706.	.7989	.8360	.8737	24.16	.7542	.000744
1.425	5.587	1762.	.8062	.8414	.8790	24.33	.7400	.000764
1.466	5.737	1810.	.8107	.8466	.8821	24.43	.7278	.000815
1.514	5.935	1872.	.8160	.8495	.8858	24.55	.7111	.000858
1.562	6.075	1916.	.8225	.8534	.8903	24.70	.6991	.000889
1.609	6.209	1959.	.8264	.8563	.8931	24.74	.6873	.000919
1.650	6.417	2024.	.8350	.8628	.8990	24.98	.6685	.000967
1.699	6.611	2085.	.8398	.8665	.9023	25.08	.6507	.001012
1.735	6.780	2129.	.8442	.8697	.9052	25.18	.6374	.001044
1.773	6.939	2169.	.8537	.8787	.9115	25.30	.6196	.001089
1.814	7.104	2242.	.8557	.8787	.9129	25.43	.6031	.001130
1.854	7.242	2291.	.8632	.8845	.9179	25.59	.5879	.001167
1.894	7.451	2351.	.8694	.8893	.9219	25.73	.5689	.001214
1.931	7.635	2408.	.8733	.8924	.9244	25.81	.5501	.001259
1.969	7.819	2466.	.8788	.8968	.9280	25.93	.5311	.001305
2.004	7.988	2520.	.8843	.9011	.9315	26.04	.5134	.001344
2.033	8.131	2581.	.8903	.9060	.9353	26.17	.4928	.001397
2.069	8.370	2641.	.8963	.9109	.9391	26.30	.4726	.001445
2.102	8.609	2700.	.9018	.9154	.9426	26.42	.4523	.001493
2.134	8.793	2764.	.9056	.9184	.9449	26.49	.4365	.001530
2.161	8.927	2814.	.9115	.9233	.9486	26.62	.4123	.001587
2.182	9.126	2879.	.9181	.9288	.9526	26.75	.3906	.001638
2.207	9.265	2923.	.9218	.9319	.9549	26.83	.3753	.001673
2.234	9.456	2982.	.9270	.9362	.9580	26.93	.3647	.001721
2.261	9.633	3039.	.9335	.9417	.9619	27.07	.3351	.001766
2.283	9.787	3078.	.9365	.9443	.9637	27.13	.3216	.001797
2.301	9.924	3138.	.9414	.9485	.9667	27.23	.3011	.001843
2.328	10.090	3183.	.9449	.9514	.9687	27.30	.2856	.001879
2.350	10.204	3219.	.9482	.9543	.9707	27.36	.2734	.001904
2.375	10.408	3283.	.9514	.9570	.9725	27.43	.2517	.001955
2.399	10.587	3342.	.9548	.9617	.9757	27.54	.2330	.001998
2.425	10.890	3407.	.9582	.9690	.9805	27.70	.1918	.002040
2.445	11.124	3472.	.9602	.9725	.9828	27.78	.1775	.002122
2.475	11.255	3500.	.9682	.9725	.9836	27.81	.1558	.002148
2.491	11.635	3606.	.9707	.9738	.9852	27.84	.1485	.002186
2.507	11.635	3677.	.9734	.9767	.9852	27.94	.1276	.002233
2.528	11.656	3775.	.9775	.9798	.9875	27.99	.1181	.002254
2.544	11.740	3810.	.9800	.9820	.9899	28.03	.0996	.002295
2.561	11.949	3876.	.9822	.9840	.9901	28.07	.0881	.002320
2.573	12.103	3918.	.9840	.9854	.9911	28.07	.0785	.002341
2.592	12.217	3954.	.9856	.9871	.9920	28.10	.0700	.002352
2.605	12.424	4020.	.9880	.9901	.9939	28.17	.0617	.002378
2.620	12.424	4075.	.9915	.9924	.9953	28.22	.0366	.002433
2.632	12.759	4089.	.9932	.9939	.9962	28.25	.0224	.002463
2.645	12.983	4130.	.9944	.9953	.9971	28.28	.0139	.002492
2.653	13.092	4171.	.9953	.9958	.9974	28.29	.0046	.002502
2.665	13.241	4229.	.9967	.9967	.9980	28.31	0.0000	.002512
2.675	13.406	4271.	.9974	.9974	.9985	28.33	0.0000	.002512
2.685	13.539	4378.	.9983	.9985	.9991	28.35	0.0000	.002512
2.695	13.877	4475.	.9993	.9995	.9997	28.37	0.0000	.002512
2.705	14.185	4522.	.9994	.9995	.9997	28.37	0.0000	.002512
2.711	14.334	4590.	1.0000	1.0000	1.0000	28.39	0.0000	.002512
2.744	14.657	4622.	.9998	.9998	.9999	28.37	0.0000	.002512
2.752	14.901	4669.	1.0001	1.0001	1.0000	28.38	0.0000	.002512

TABLE A13. (CONT.)
PROFILE - JPL-5 - - - PITOT PRESSURE DATA

EDGE MACH NO. = 2.1722		TOTAL PRESSURE = .9331E+05 N/M**2		TOTAL TEMPERATURE = 312.05 DEG-K		M = 3.127		DELTA = 3.489R CM	
X = 7.62 CM		RE-THETA = 250.60.		PI = .4275		YMIN = .153 CM			
U = 552.35 M/SEC		DELTA STAR = .8137 CM		THETA = .2601 CM		M = 3.127			
RE-DELTA-STAR = 78400.		RE-THETA = 250.60.		PI = .4275		YMIN = .153 CM			
LEAST SQUARE FIT PARAMETERS		CE = .001424		YMAX = 3.295 CM					
UTIME = 21.3250 M/SEC									
CHISQR = .0870E-05									
Y (CM)	Y/THETA	Y-PLUS	M/WE	RHO/RHOF	U/UE	U-PLUS	TAU/TAU-MAX	V/U	
0.200	0.070	0.	0.0000	.5448	0.0000	0.00	1.0000	0.000000	
.010	.034	12.	.2989	.5855	.3006	10.23	1.0000	0.000000	
.011	.063	13.	.3327	.5957	.4313	11.33		0.000000	
.031	.171	34.	.4332	.6303	.5657	14.47	.9990	0.000007	
.059	.220	72.	.4762	.6481	.7115	15.76	.9991	.000007	
.073	.322	101.	.5042	.6604	.8213	16.57	.9976	.000016	
.073	.300	120.	.5221	.6689	.8383	17.09	.9960	.000024	
.111	.423	134.	.5326	.6740	.8689	17.39	.9940	.000029	
.134	.517	143.	.5425	.6788	.8885	17.67	.9939	.000033	
.153	.590	148.	.5444	.6840	.8971	18.00	.9921	.000041	
.191	.716	173.	.5745	.6840	.8971	18.56	.9905	.000044	
.223	.808	202.	.5884	.7024	.7026	18.94	.9871	.000051	
.243	.956	202.	.5962	.7067	.7063	19.15	.9841	.000073	
.254	1.093	345.	.6103	.7144	.7221	19.53	.9815	.000072	
.332	1.278	403.	.6217	.7208	.7322	19.83	.9778	.000056	
.350	1.316	436.	.6281	.7246	.7300	20.00	.9725	.000015	
.397	1.527	480.	.6348	.7284	.7300	20.23	.9694	.000125	
.467	1.718	542.	.6476	.7350	.7456	20.52	.9649	.000141	
.530	1.884	506.	.6539	.7394	.7450	20.57	.9587	.000162	
.513	1.871	622.	.6613	.7437	.7403	20.47	.9530	.000120	
.503	2.167	679.	.6711	.7499	.7464	20.84	.9498	.000140	
.519	2.304	726.	.6757	.7527	.7750	21.12	.9433	.000211	
.632	2.650	773.	.6818	.7606	.7789	21.24	.9377	.000229	
.670	2.876	822.	.6890	.7621	.7839	21.33	.9314	.000249	
.723	2.797	878.	.6958	.7652	.7814	21.62	.9248	.000249	
.723	2.806	916.	.6970	.7692	.7814	21.74	.9171	.000242	
.741	3.001	947.	.7020	.7698	.8004	21.90	.9121	.000307	
.803	3.153	995.	.7138	.7747	.8013	21.92	.9071	.000372	
.861	3.309	1045.	.7154	.7797	.8156	22.19	.8994	.000344	
.894	3.436	1084.	.7252	.7842	.8189	22.30	.8920	.000366	
.912	3.582	1131.	.7299	.7873	.8226	22.47	.8855	.000345	
.972	3.748	1182.	.7371	.7922	.8262	22.58	.8777	.000409	
.972	3.748	1182.	.7371	.7922	.8262	22.76	.8685	.000434	
1.000	3.844	1216.	.7416	.7968	.8312	22.85	.8630	.000450	
1.036	3.983	1267.	.7431	.7984	.8312	22.90	.8560	.000477	
1.052	4.168	1313.	.7521	.8023	.8337	23.12	.8445	.000502	
1.114	4.290	1346.	.7660	.8053	.8433	23.23	.8363	.000524	
1.153	4.431	1392.	.7623	.8093	.8473	23.36	.8272	.000549	
1.203	4.577	1441.	.7623	.8132	.8524	23.52	.8163	.000565	
1.212	4.746	1466.	.7640	.8192	.8567	23.66	.8049	.000610	
1.213	4.845	1504.	.7787	.8208	.8595	23.74	.7957	.000635	
1.213	5.041	1506.	.7787	.8208	.8657	23.94	.7822	.000671	

TABLE A13. (CONT.)
M/NE

Y (CM)	Y/THETA	Y-PLUS	M/NE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
1.347	5.756	1640.	.7919	.8691	24.05	.7692	.000706
1.417	5.447	1720.	.8000	.8749	24.24	.7545	.000744
1.474	5.481	1794.	.8072	.8800	24.40	.7358	.000793
1.511	5.808	1834.	.8112	.8878	24.49	.7254	.000820
1.562	6.003	1894.	.8171	.8869	24.62	.7090	.000862
1.610	6.198	1954.	.8269	.8937	24.84	.6930	.000903
1.654	6.360	2008.	.8309	.8964	24.93	.6779	.000941
1.704	6.550	2068.	.8352	.8993	25.03	.6607	.000985
1.742	6.694	2114.	.8390	.9019	25.11	.6472	.001019
1.785	6.901	2179.	.8485	.9084	25.32	.6279	.001067
1.834	7.067	2231.	.8559	.9133	25.48	.6119	.001106
1.882	7.233	2284.	.8651	.9159	25.57	.5957	.001146
1.930	7.419	2342.	.8742	.9229	25.68	.5772	.001191
1.979	7.570	2390.	.8808	.9253	25.80	.5620	.001228
2.024	7.702	2432.	.8862	.9295	25.88	.5484	.001261
2.063	7.822	2492.	.8905	.9330	26.02	.5289	.001308
2.103	8.024	2552.	.8953	.9356	26.13	.5090	.001356
2.139	8.224	2597.	.8982	.9375	26.22	.4941	.001391
2.175	8.341	2640.	.9015	.9407	26.29	.4793	.001427
2.235	8.590	2712.	.9068	.9446	26.39	.4551	.001444
2.273	8.737	2759.	.9099	.9478	26.52	.4393	.001521
2.314	8.893	2811.	.9127	.9570	26.63	.4214	.001563
2.364	9.088	2870.	.9169	.9544	26.78	.4010	.001610
2.422	9.235	2916.	.9208	.9572	26.85	.3854	.001647
2.479	9.469	2984.	.9254	.9631	26.95	.3620	.001700
2.538	9.604	3033.	.9293	.9695	27.03	.3451	.001739
2.599	9.757	3084.	.9352	.9739	27.15	.3287	.001777
2.614	9.813	3130.	.9394	.9767	27.23	.3119	.001815
2.664	10.064	3178.	.9434	.9809	27.32	.2957	.001852
2.694	10.172	3212.	.9468	.9815	27.38	.2843	.001878
2.733	10.318	3258.	.9494	.9715	27.44	.2698	.001913
2.773	10.504	3317.	.9536	.9739	27.52	.2493	.001957
2.815	10.640	3364.	.9584	.9767	27.61	.2332	.001993
2.877	10.821	3417.	.9629	.9782	27.70	.2167	.002030
2.934	11.060	3492.	.9675	.9819	27.79	.1927	.002084
2.987	11.280	3562.	.9695	.9830	27.83	.1712	.002132
3.035	11.450	3625.	.9745	.9859	27.93	.1521	.002174
3.094	11.665	3683.	.9779	.9878	28.00	.1349	.002212
3.154	11.900	3757.	.9832	.9907	28.10	.1139	.002257
3.214	12.124	3828.	.9848	.9916	28.13	.0947	.002301
3.270	12.300	3884.	.9878	.9933	28.19	.0802	.002333
3.293	12.575	3949.	.9904	.9947	28.24	.0637	.002369
3.347	12.666	3999.	.9921	.9954	28.27	.0516	.002395
3.375	12.927	4050.	.9939	.9966	28.31	.0399	.002421
3.423	13.150	4155.	.9953	.9974	28.33	.0303	.002442
3.441	13.379	4224.	.9969	.9983	28.37	.0182	.002468
3.516	13.514	4268.	.9978	.9988	28.38	.0048	.002497
3.552	13.652	4311.	.9989	.9994	28.40	0.0000	.002508
3.601	13.843	4371.	.9993	.9996	28.41	0.0000	.002508
3.637	13.979	4414.	1.0003	1.0002	28.43	0.0000	.002508
3.665	14.087	4448.	1.0005	1.0003	28.44	0.0000	.002508
3.714	14.282	4510.	1.0007	1.0004	28.44	0.0000	.002508

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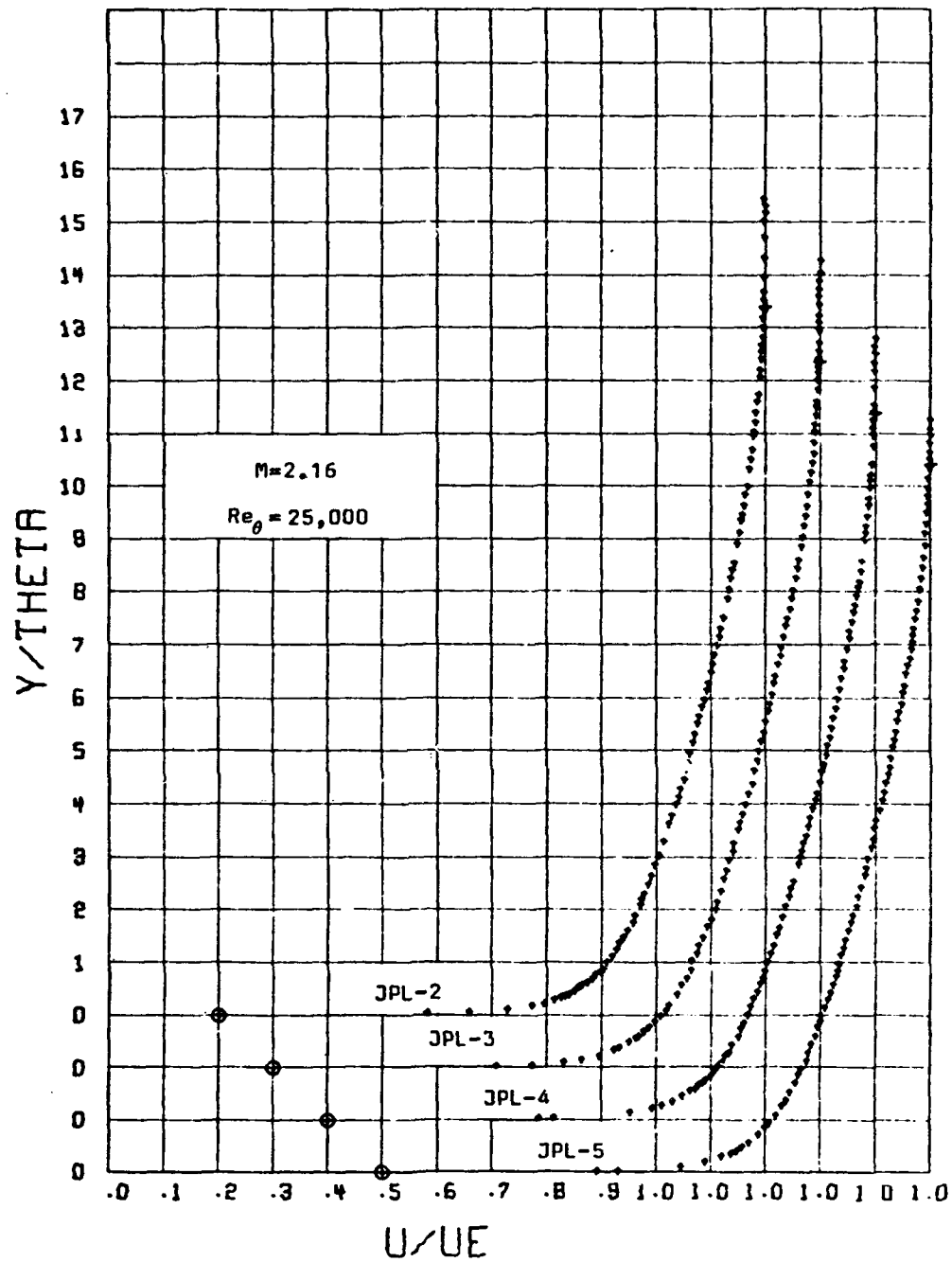


Figure A37. Mean Velocity Profiles.

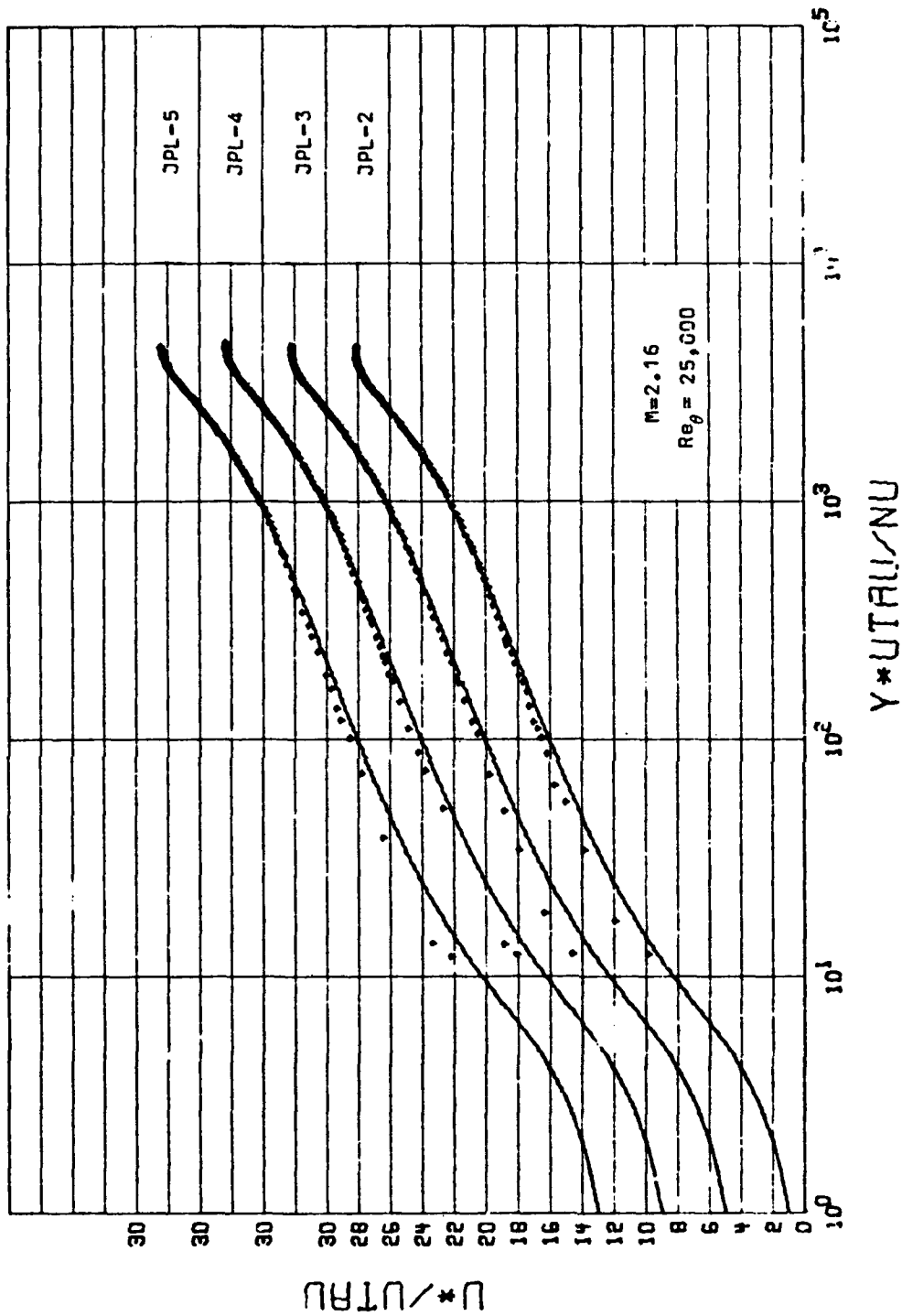


Figure A39, Van Driest Scaled mean Velocity Profiles.

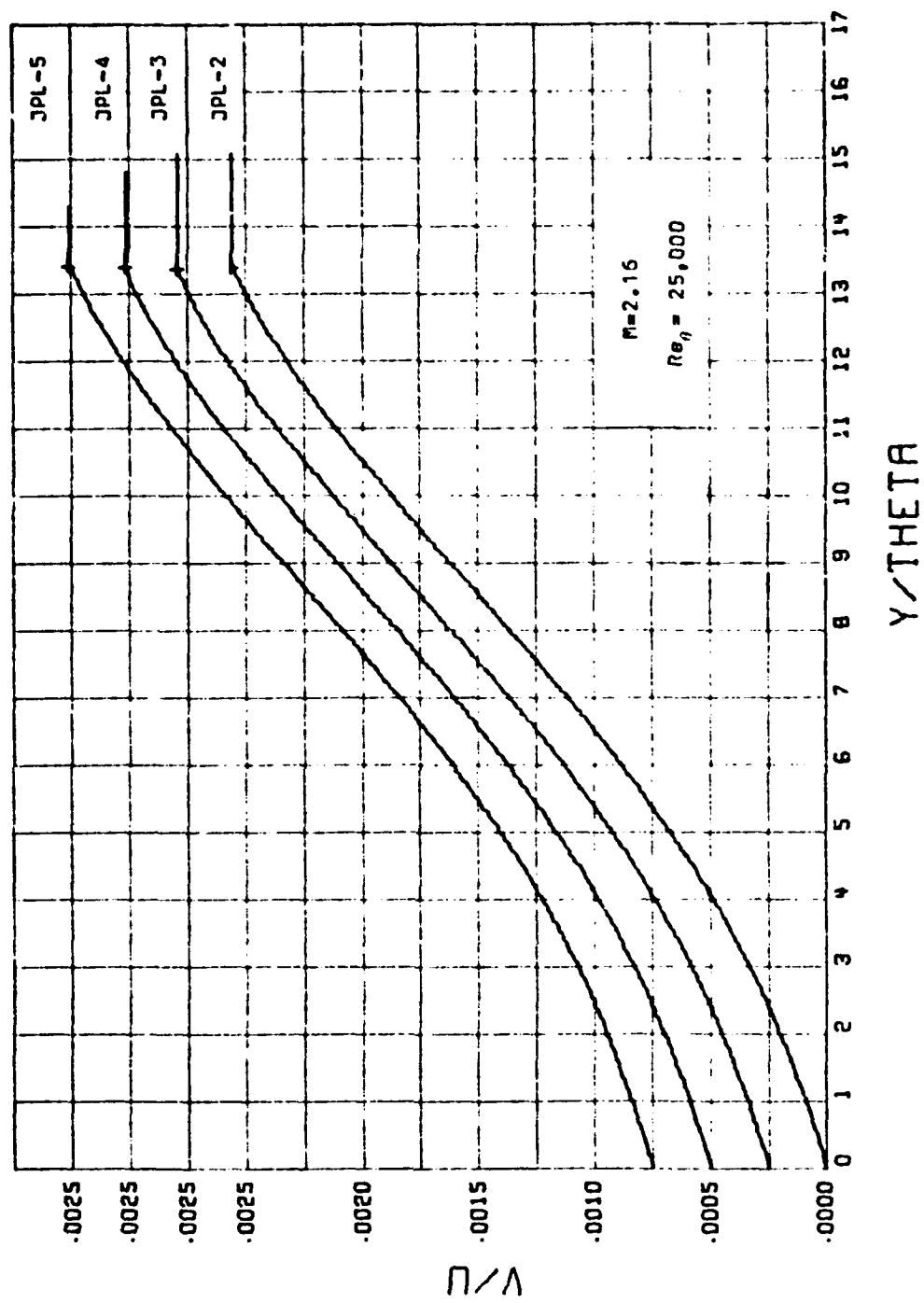


Figure A39. Normal Velocity Distribution.

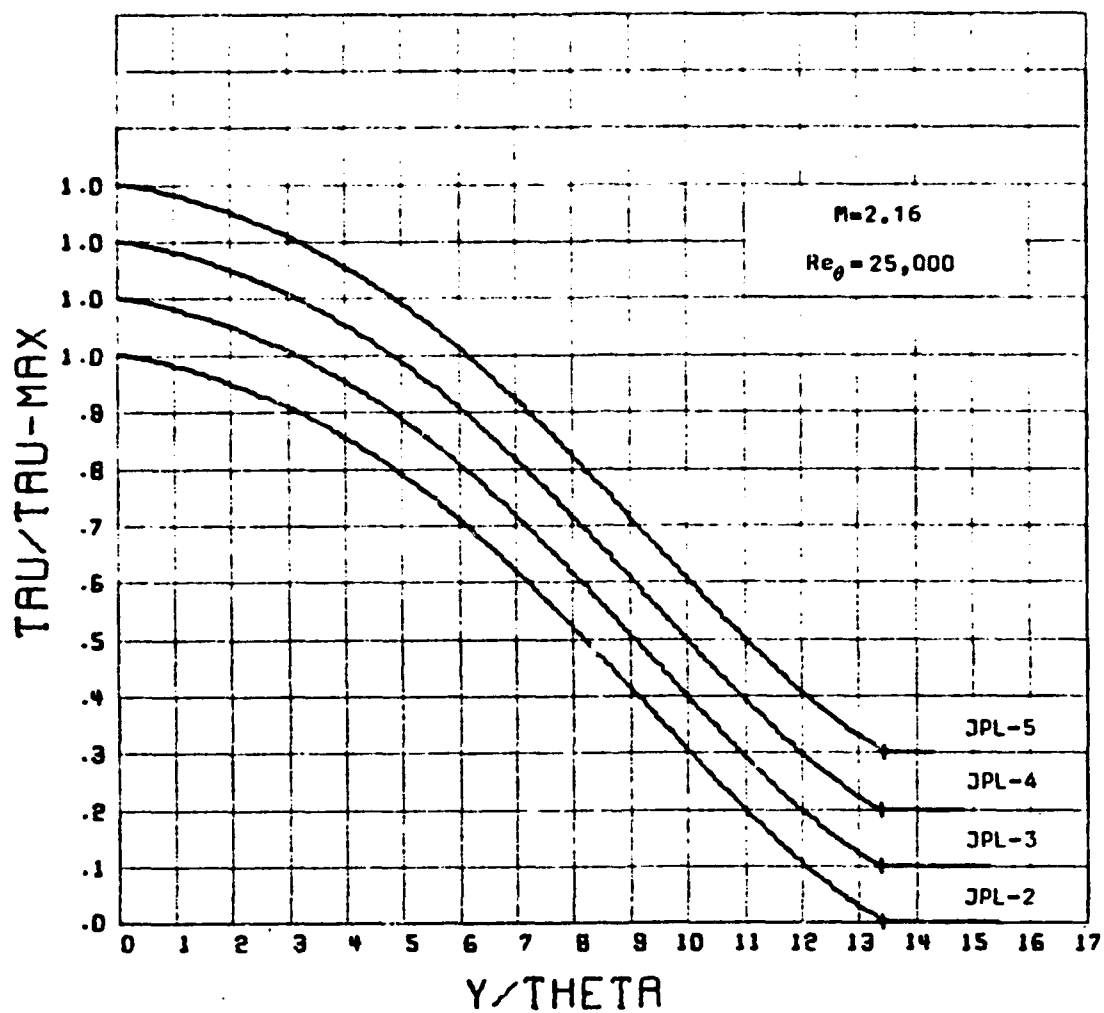


Figure A40. Shear Stress Distribution.

TABLE A14. DATA SUMMARY
PROFILE - JPL-2 - - - PITOT PRESSURE DATA

EDGE MACH NO. = 2.1812 TOTAL PRESSURE = .1799E+06 N/M²
X = 26.21 CM TOTAL TEMPERATURE = 324.18 DEG-K

Y (CM)	Y/TMETA	Y-PLUS	M/ME	RHO/RMFE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.5428	0.0000	0.00	1.0000	0.000000
.010	.064	21.	.3429	.5964	.4440	11.99	1.0000	0.000050
.022	.103	48.	.4149	.6215	.5263	14.31	.9999	.000104
.033	.140	70.	.4437	.6328	.5784	15.21	.9996	.000008
.055	.253	118.	.4964	.6555	.6131	16.41	.9949	.000016
.069	.316	148.	.5140	.6634	.6310	17.36	.9857	.000011
.082	.373	175.	.5305	.6715	.6474	17.82	.9846	.000014
.104	.471	221.	.5504	.6813	.6668	18.47	.9826	.000034
.133	.603	263.	.5741	.6934	.6904	19.37	.9806	.000064
.164	.753	353.	.5903	.7021	.7065	19.53	.9800	.000090
.195	.885	415.	.6024	.7087	.7155	19.86	.9824	.000071
.220	1.137	531.	.6237	.7204	.7343	20.44	.9758	.000093
.249	1.311	614.	.6380	.7289	.7472	20.83	.9704	.000110
.322	1.460	684.	.6459	.7335	.7541	21.04	.9660	.000124
.337	1.529	717.	.6502	.7361	.7574	21.16	.9638	.000132
.377	1.707	800.	.6584	.7410	.7648	21.38	.9589	.000140
.414	1.904	874.	.6668	.7441	.7720	21.67	.9518	.000168
.441	2.001	914.	.6743	.7407	.7782	21.80	.9477	.000181
.478	2.167	1016.	.6810	.7448	.7848	21.97	.9416	.000164
.504	2.282	1070.	.6877	.7490	.7903	22.14	.9372	.000212
.543	2.461	1153.	.6943	.7532	.7948	22.32	.9302	.000232
.577	2.614	1224.	.7025	.7566	.8014	22.52	.9238	.000267
.604	2.841	1269.	.7100	.7572	.8121	22.87	.9036	.000292
.638	3.041	1361.	.7217	.7610	.8167	23.11	.9014	.000317
.673	3.114	1441.	.7312	.7672	.8241	23.26	.9004	.000341
.707	3.341	1566.	.7348	.7610	.8285	23.39	.9043	.000359
.747	3.473	1628.	.7434	.7645	.8335	23.55	.9042	.000374
.810	3.654	1710.	.7507	.7694	.8390	23.73	.9060	.000384
.852	3.858	1808.	.7580	.7741	.8431	23.84	.9053	.000397
.897	4.019	1874.	.7650	.7772	.8472	24.16	.9032	.000404
.970	4.303	2100.	.7727	.7833	.8545	24.25	.9025	.000421
1.004	4.565	2140.	.7777	.7858	.8584	24.45	.9017	.000437
1.073	4.724	2216.	.7804	.7858	.8611	24.65	.9013	.000457
1.070	4.893	2264.	.7856	.7920	.8640	24.71	.9009	.000472
1.115	5.044	2366.	.7915	.7967	.8692	25.21	.9024	.000472
1.233	5.451	2555.	.8044	.8184	.8784	25.31	.9024	.000472
1.242	5.621	2676.	.8092	.8222	.8817	25.43	.9024	.000472
1.304	5.953	2774.	.8223	.8319	.8904	25.46	.9024	.000472
1.387	6.147	2801.	.8272	.8354	.8942	25.46	.9024	.000472
1.340	6.291	2840.	.8327	.8400	.8980	25.47	.9024	.000472
1.430	6.475	3035.	.8390	.8464	.9022	25.81	.9024	.000472
1.473	6.670	3127.	.8430	.8477	.9049	25.90	.9024	.000472

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TABLE A14. (CONT.)
M/NE RHO/RHOE

Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHOE	U/NE	U-PLUS	TAU/TAU-MAX	V/U
1.509	6.831	3202.	.8474	.8712	.9079	24.00	.4513	.000940
1.544	6.992	3278.	.8545	.8767	.9126	26.16	.4371	.000974
1.548	7.239	3394.	.8595	.8805	.9159	26.27	.4147	.001026
1.629	7.377	3458.	.8630	.8833	.9182	26.35	.6020	.001055
1.641	7.521	3526.	.8682	.8874	.9216	26.46	.5486	.001086
1.649	7.694	3607.	.8761	.8937	.9247	26.64	.5723	.001124
1.743	7.895	3701.	.8770	.8945	.9273	26.66	.5530	.001164
1.770	8.016	3758.	.8827	.8980	.9309	26.70	.5413	.001195
1.828	8.280	3882.	.8900	.9050	.9356	26.94	.5151	.001254
1.856	8.407	3941.	.8954	.9094	.9389	27.04	.5077	.001282
1.884	8.579	4022.	.8976	.9112	.9403	27.10	.4854	.001321
1.931	8.746	4100.	.9070	.9184	.9431	27.20	.4486	.001359
1.991	8.970	4205.	.9067	.9186	.9459	27.30	.4458	.001409
2.057	9.315	4367.	.9174	.9274	.9525	27.53	.4105	.001487
2.057	9.498	4448.	.9226	.9320	.9557	27.64	.3928	.001526
2.128	9.637	4518.	.9241	.9338	.9566	27.67	.3774	.001560
2.146	9.764	4577.	.9306	.9384	.9605	27.80	.3643	.001589
2.200	9.965	4711.	.9332	.9410	.9620	27.86	.3436	.001634
2.270	10.097	4733.	.9369	.9441	.9642	27.93	.3301	.001683
2.270	10.241	4820.	.9418	.9484	.9671	28.04	.3112	.001704
2.298	10.404	4779.	.9449	.9510	.9689	28.10	.2984	.001732
2.344	10.707	5019.	.9494	.9549	.9715	28.19	.2682	.001766
2.387	10.854	5089.	.9546	.9594	.9746	28.30	.2533	.001828
2.435	11.029	5170.	.9577	.9621	.9763	28.35	.2362	.001865
2.480	11.270	5283.	.9631	.9649	.9794	28.47	.2127	.001915
2.517	11.397	5343.	.9668	.9702	.9816	28.55	.2006	.001940
2.520	11.547	5413.	.9697	.9728	.9832	28.61	.1845	.001970
2.508	11.745	5515.	.9728	.9755	.9850	28.67	.1662	.002013
2.628	11.903	5580.	.9757	.9781	.9866	28.73	.1534	.002039
2.664	12.064	5655.	.9771	.9793	.9873	28.75	.1393	.002069
2.700	12.225	5731.	.9807	.9825	.9894	28.83	.1252	.002099
2.733	12.375	5801.	.9822	.9839	.9902	28.84	.1125	.002126
2.716	12.570	5893.	.9840	.9855	.9912	28.89	.0963	.002159
2.806	12.704	6057.	.9867	.9879	.9927	28.95	.0843	.002182
2.841	12.855	6173.	.9878	.9889	.9933	28.97	.0742	.002222
2.890	13.088	6135.	.9900	.9909	.9945	29.01	.0544	.002242
2.923	13.237	6205.	.9912	.9920	.9952	29.03	.0457	.002264
2.940	13.404	6284.	.9919	.9927	.9956	29.05	.0341	.002284
2.920	13.542	6348.	.9936	.9942	.9965	29.08	.0252	.002317
3.020	13.674	6410.	.9940	.9944	.9967	29.09	.0169	.002334
3.061	13.764	6499.	.9947	.9952	.9971	29.10	.0054	.002367
3.100	14.036	6580.	.9960	.9963	.9978	29.13	0.0000	.002359
3.134	14.215	6654.	.9965	.9968	.9981	29.14	0.0000	.002359
3.200	14.431	6793.	.9977	.9979	.9987	29.16	0.0000	.002359
3.262	14.744	6931.	.9986	.9987	.9992	29.18	0.0000	.002359
3.417	15.112	7084.	.9985	.9986	.9992	29.18	0.0000	.002359
3.315	15.376	7203.	.9992	.9993	.9996	29.19	0.0000	.002359
3.470	15.716	7367.	.9996	.9997	.9998	29.20	0.0000	.002359
3.565	16.055	7526.	.9996	.9997	.9998	29.20	0.0000	.002359
3.634	16.331	7654.	.9998	.9998	.9999	29.20	0.0000	.002359
3.637	16.449	7770.	.9996	.9996	.9998	29.20	0.0000	.002359
3.690	16.654	7872.	.9998	.9998	.9999	29.20	0.0000	.002359
3.714	16.814	7982.	1.0000	1.0000	1.0000	29.21	0.0000	.002359
3.760	17.027	7982.	1.0005	1.0005	1.0002	29.22	0.0000	.002359

TABLE A14. (CONT.)
PROFILE - JPL-3 - - - PITOT PRESSURE DATA

EDGE MACH NO. = 2.1737 TOTAL PRESSURE = 1.102E+06 N/M²
X = -7.62 CM TOTAL TEMPERATURE = 321.27 DEG-K

Y (CM)	Y/THETA	Y-PLUS	P/ME	RHO/RHOE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.5445	0.0000	0.00	1.0000	0.000000
.010	.045	21.	.3431	.5981	.6436	12.02	1.0000	0.000000
.026	.119	57.	.4316	.6264	.5441	14.86	.9991	.000005
.050	.170	52.	.4675	.6441	.5826	15.97	.9983	.000009
.067	.277	134.	.5078	.6597	.6191	17.03	.9965	.000018
.078	.351	170.	.5243	.6697	.6406	17.67	.9940	.000024
.099	.442	213.	.5444	.6800	.6616	18.29	.9912	.000032
.121	.546	263.	.5575	.6861	.6730	18.63	.9890	.000040
.145	.617	299.	.5707	.6920	.6846	19.01	.9873	.000046
.169	.664	323.	.5808	.6982	.6951	19.30	.9860	.000051
.193	.753	346.	.5984	.7024	.7023	19.52	.9840	.000058
.205	.918	444.	.6055	.7115	.7119	19.69	.9817	.000067
.228	1.045	515.	.6198	.7194	.7307	20.34	.9777	.000078
.271	1.213	587.	.6290	.7248	.7380	20.43	.9716	.000100
.294	1.315	636.	.6378	.7298	.7446	20.47	.9705	.000110
.332	1.436	718.	.6504	.7372	.7575	21.21	.9647	.000124
.369	1.640	796.	.6593	.7419	.7642	21.47	.9599	.000143
.400	1.735	864.	.6663	.7455	.7696	21.59	.9554	.000154
.439	1.941	940.	.6715	.7490	.7746	21.77	.9502	.000174
.482	2.153	1042.	.6819	.7563	.7841	22.34	.9422	.000194
.519	2.301	1113.	.6926	.7629	.7927	22.31	.9366	.000217
.561	2.460	1193.	.6961	.7652	.7957	22.41	.9303	.000230
.604	2.640	1283.	.7043	.7704	.8023	22.41	.9224	.000252
.641	2.842	1365.	.7178	.7770	.8092	22.43	.9134	.000277
.676	3.071	1442.	.7193	.7822	.8143	22.03	.9042	.000297
.715	3.191	1442.	.7248	.7851	.8207	23.19	.8953	.000314
.762	3.401	1442.	.7333	.7895	.8263	23.35	.8861	.000346
.800	3.571	1726.	.7398	.7938	.8303	23.51	.8764	.000360
.840	3.752	1914.	.7472	.7948	.8360	23.69	.8701	.000364
.880	3.928	1901.	.7552	.8063	.8421	23.89	.8605	.000419
.920	4.064	1964.	.7577	.8061	.8460	23.95	.8532	.000434
.961	4.200	2132.	.7643	.8116	.8489	24.11	.8451	.000459
.991	4.437	2162.	.7723	.8192	.8544	24.30	.8315	.000464
1.033	4.614	2233.	.7770	.8195	.8583	24.42	.8200	.000484
1.074	4.799	2315.	.7851	.8257	.8642	24.41	.8087	.000552
1.124	5.022	2430.	.7915	.8299	.8698	24.76	.7933	.000591
1.143	5.192	2512.	.7977	.8364	.8733	24.41	.7816	.000640
1.198	5.360	2689.	.8072	.8374	.8765	24.92	.7704	.000647
1.244	5.520	2672.	.8102	.8436	.8822	25.20	.7481	.000674
1.274	5.646	2757.	.8133	.8459	.8872	25.29	.7450	.000710
1.314	5.983	2847.	.8181	.8496	.8977	25.39	.7307	.000744

PI = .5492
YMIN = .078 CM
DELTA = 3.1256 CM

LEAST SQUARE FIT PARAMETERS
UTAU = 21.0165 M/SEC
CHISQR = .5273E-05

U = 560.46 M/SEC
RE-DELTA-STAR = 125700.
DELTA STAR = .6942 CM
RE-THETA = .40570.
THETA = .2240 CM
MINALL = .9779 CM/SEC

M = 3.098

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TABLE A14. (CONT.)
M/ME RHO/RHOF

Y (CM)	Y/TMFA	Y-PLUS	M/ME	RHO/RHOF	U/Ue	I-PLUS	TAU/TAU-MAX	V/U
1.357	6.059	2932.	.8252	.8547	.8926	25.55	.7169	.002777
1.404	6.249	3034.	.8319	.8597	.8972	25.70	.7000	.00081A
1.447	6.461	3127.	.8367	.8634	.9005	25.82	.6841	.00045A
1.503	6.711	3248.	.8482	.8723	.9042	26.08	.6629	.000905
1.531	6.836	3308.	.8515	.8767	.9084	26.15	.6521	.000731
1.567	6.994	3385.	.8542	.8817	.9122	26.21	.6381	.000963
1.612	7.149	3484.	.8604	.8877	.9163	26.35	.6196	.001367
1.656	7.391	3577.	.8666	.8864	.9203	26.44	.6022	.001047
1.691	7.550	3654.	.8688	.8884	.9218	26.54	.5874	.001011
1.727	7.709	3731.	.8716	.8932	.9258	26.67	.5724	.001115
1.770	7.901	3824.	.8816	.8986	.9300	26.82	.5540	.001157
1.799	8.032	3887.	.8842	.9006	.9317	26.87	.5414	.001145
1.832	8.179	3958.	.8882	.9039	.9342	26.96	.5271	.001218
1.884	8.411	4071.	.8952	.9095	.9386	27.11	.5041	.001269
1.920	8.570	4148.	.8980	.9118	.9404	27.18	.4883	.001304
1.953	8.717	4219.	.9013	.9154	.9431	27.27	.4734	.001337
2.004	8.944	4329.	.9088	.9207	.9471	27.41	.4506	.001388
2.037	9.042	4400.	.9118	.9232	.9490	27.47	.4356	.001421
2.056	9.177	4441.	.9144	.9253	.9505	27.53	.4270	.001440
2.098	9.364	4532.	.9184	.9287	.9530	27.61	.4079	.001482
2.156	9.624	4658.	.9269	.9358	.9581	27.79	.3811	.001540
2.193	9.789	4737.	.9296	.9381	.9597	27.85	.3643	.001574
2.242	10.010	4844.	.9353	.9429	.9631	27.97	.3417	.001625
2.290	10.180	4927.	.9400	.9470	.9660	28.07	.3243	.001663
2.315	10.333	5001.	.9440	.9505	.9683	28.15	.3088	.001696
2.360	10.537	5100.	.9484	.9542	.9709	28.24	.2942	.001740
2.416	10.786	5220.	.9519	.9573	.9729	28.31	.2762	.001793
2.457	10.968	5308.	.9588	.9632	.9769	28.45	.2652	.001831
2.514	11.223	5432.	.9638	.9677	.9798	28.56	.2205	.001883
2.520	11.302	5508.	.9647	.9702	.9815	28.61	.2053	.001915
2.590	11.563	5596.	.9675	.9709	.9819	28.63	.1882	.001951
2.650	11.784	5703.	.9731	.9758	.9851	28.74	.1678	.001964
2.650	11.965	5791.	.9761	.9785	.9867	28.80	.1515	.002028
2.727	12.175	5892.	.9787	.9809	.9882	28.86	.1331	.002036
2.773	12.379	5981.	.9818	.9834	.9900	28.92	.1154	.002103
2.811	12.549	6073.	.9828	.9845	.9905	28.94	.1017	.002132
2.847	12.708	6150.	.9854	.9884	.9919	28.99	.0888	.002158
2.847	12.847	6227.	.9874	.9888	.9931	29.03	.0767	.002163
2.921	13.037	6309.	.9885	.9894	.9937	29.05	.0640	.002210
2.941	13.218	6397.	.9900	.9909	.9945	29.08	.0509	.002246
3.012	13.445	6507.	.9909	.9918	.9950	29.10	.0354	.002268
3.053	13.626	6595.	.9921	.9929	.9957	29.12	.0238	.002292
3.084	13.785	6672.	.9935	.9941	.9964	29.15	.0141	.002317
3.124	13.944	6748.	.9949	.9954	.9972	29.18	.0050	.002331
3.154	14.080	6814.	.9951	.9955	.9973	29.18	0.0000	.002341
3.171	14.153	6850.	.9950	.9955	.9973	29.18	0.0000	.002341
3.213	14.340	6940.	.9964	.9968	.9980	29.21	0.0000	.002341
3.274	14.653	7094.	.9976	.9978	.9986	29.23	0.0000	.002341
3.341	15.004	7261.	.9986	.9987	.9992	29.25	0.0000	.002341
3.435	15.332	7421.	.9989	.9990	.9994	29.26	0.0000	.002341
3.535	15.700	7637.	.9997	.9997	.9998	29.27	0.0000	.002341
3.611	16.120	7802.	.9996	.9996	.9997	29.27	0.0000	.002341
3.698	16.506	7988.	1.0001	1.0001	1.0000	29.28	0.0000	.002341
3.731	16.653	8060.	1.0001	1.0001	1.0000	29.28	0.0000	.002341

TABLE A14. (CONT.)
PROFILE - JPL-4 - - - PITOT PRESSURE DATA

ENGINE MACH NO. = 2.1820 TOTAL PRESSURE = .1798E+06 N/M²
X = 0.00 CM TOTAL TEMPERATURE = 321.27 DEG-K

UE = 541.76 M/SEC DELTA STAR = .7178 CM THETA = .2312 CM M = 3.104
RE-DELTA-STAR = 120100. RE-THETA = .41600. MINALL = .0781 CM=2/SEC CF = .001445
DELTA = 3.2627 CM

LEAST SQUARE FIT PARAMETERS
UTAU = 21.0772 M/SEC CF = .001527
CHISQR = .2030E-04 YMAX = 3.094 CM

P1 = .5463
YMIN = .063 CM

Y (CM)	Y/THETA	Y-PLUS	M/NE	RHO/RHORE	U/UF	I-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.5424	0.0000	0.00	1.0000	0.000000
.010	.043	21.	.3418	.5961	.6427	11.98	1.0000	0.000000
.017	.076	38.	.4041	.6173	.6143	14.00	.9996	.000302
.026	.159	79.	.4662	.6429	.5818	15.94	.9984	.000209
.052	.375	112.	.5009	.6574	.6170	15.08	.9973	.000214
.063	.574	134.	.5216	.6570	.6384	17.59	.9944	.000018
.093	.806	202.	.5437	.6778	.6694	18.24	.9938	.000229
.114	.910	254.	.5615	.6868	.6775	18.76	.9916	.000138
.142	.915	304.	.5779	.6954	.6930	19.22	.9902	.000347
.167	.924	341.	.5915	.7024	.7054	19.60	.9885	.000054
.179	.938	385.	.6017	.7082	.7150	19.69	.9853	.000261
.215	.933	445.	.6127	.7133	.7249	20.19	.9811	.000075
.254	1.008	447.	.6276	.7224	.7382	20.60	.9765	.000140
.304	1.323	659.	.6414	.7308	.7503	20.97	.9699	.000111
.372	1.827	711.	.6480	.7347	.7650	21.15	.9687	.000121
.416	1.808	801.	.6565	.7397	.7633	21.37	.9609	.000159
.447	1.801	893.	.6664	.7466	.7701	21.59	.9544	.000159
.461	1.812	943.	.6727	.7496	.7770	21.83	.9494	.000173
.491	2.081	1037.	.6819	.7553	.7847	22.04	.9444	.000118
.523	2.262	1127.	.6900	.7603	.7917	22.25	.9376	.000208
.557	2.410	1201.	.6956	.7639	.7958	22.39	.9319	.000225
.594	2.563	1250.	.7048	.7658	.8033	22.63	.9264	.000243
.633	2.784	1387.	.7099	.7725	.8066	22.73	.9163	.000268
.673	2.910	1450.	.7177	.7782	.8136	22.96	.9100	.000294
.711	3.075	1532.	.7225	.7814	.8173	23.08	.9033	.000314
.753	3.255	1622.	.7265	.7854	.8220	23.23	.8948	.000347
.797	3.448	1718.	.7353	.7899	.8273	23.40	.8854	.000353
.841	3.545	1792.	.7416	.7942	.8322	23.55	.8780	.000373
.886	3.745	1861.	.7476	.7983	.8368	23.70	.8703	.000383
.919	3.975	1981.	.7549	.8033	.8423	23.84	.8578	.000426
.960	4.151	2048.	.7606	.8072	.8465	24.02	.8479	.000461
1.014	4.347	2184.	.7679	.8123	.8520	24.20	.8341	.000457
1.059	4.553	2249.	.7764	.8171	.8569	24.34	.8242	.000512
1.099	4.711	2369.	.7789	.8201	.8631	24.46	.8162	.000524
1.140	4.931	2457.	.7785	.8270	.8671	24.60	.8001	.000573
1.184	5.124	2554.	.7852	.8314	.8719	24.85	.7868	.000604
1.224	5.306	2643.	.7981	.8360	.8740	25.02	.7767	.000634
1.267	5.487	2731.	.8081	.8398	.8786	25.10	.7673	.000667
1.313	5.678	2829.	.8122	.8443	.8830	25.25	.7479	.000702
1.354	5.873	2900.	.8169	.8469	.8844	25.31	.7372	.000724
1.395	6.035	3007.	.8242	.8533	.8922	25.52	.7268	.000768

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TABLE A14.
(CONT.)
M/NE RHO/RMPE

Y (CM)	V/THETA	Y-PLUS	M/NE	RHO/RMPE	U/VE	U-PLUS	TAU/TAU-MAX	V/U
1.438	6.221	3100.	.8283	.8564	.8950	25.62	.7061	.000403
1.475	6.341	3180.	.8348	.8616	.8995	25.77	.6933	.000433
1.522	6.584	3281.	.8393	.8668	.9025	25.87	.6766	.000473
1.564	6.765	3371.	.8463	.8702	.9072	26.03	.6613	.000509
1.609	6.919	3448.	.8508	.8729	.9096	26.11	.6481	.000540
1.645	7.114	3546.	.8581	.8794	.9150	26.29	.6309	.000580
1.649	7.303	3630.	.8630	.8832	.9182	26.40	.6147	.001019
1.733	7.490	3732.	.8676	.8869	.9213	26.50	.5973	.001058
1.748	7.731	3853.	.8750	.8928	.9261	26.67	.5760	.001109
1.822	7.880	3927.	.8775	.8948	.9276	26.72	.5611	.001141
1.879	8.039	4006.	.8809	.8975	.9288	26.80	.5459	.001175
1.903	8.231	4102.	.8867	.9023	.9335	26.92	.5275	.001217
1.944	8.407	4189.	.8931	.9075	.9376	27.06	.5104	.001255
1.992	8.572	4272.	.8969	.9105	.9399	27.14	.4943	.001291
2.029	8.775	4373.	.9014	.9143	.9427	27.24	.4782	.001336
2.067	8.940	4455.	.9079	.9196	.9467	27.38	.4578	.001373
2.115	9.148	4559.	.9126	.9235	.9496	27.48	.4369	.001419
2.162	9.351	4660.	.9165	.9268	.9520	27.56	.4166	.001464
2.202	9.522	4745.	.9229	.9322	.9568	27.70	.3992	.001502
2.235	9.664	4816.	.9249	.9339	.9571	27.74	.3848	.001533
2.297	9.897	4928.	.9303	.9386	.9603	27.85	.3620	.001583
2.329	10.071	5019.	.9357	.9430	.9635	27.97	.3437	.001622
2.349	10.203	5070.	.9389	.9458	.9654	28.03	.3304	.001651
2.410	10.222	5196.	.9434	.9497	.9681	28.13	.3083	.001699
2.448	10.597	5276.	.9480	.9537	.9707	28.22	.2918	.001736
2.446	10.752	5358.	.9508	.9561	.9724	28.28	.2755	.001759
2.519	10.894	5429.	.9535	.9585	.9740	28.33	.2614	.001799
2.567	11.103	5533.	.9587	.9630	.9769	28.44	.2410	.001842
2.604	11.245	5615.	.9613	.9653	.9784	28.49	.2251	.001876
2.620	11.472	5667.	.9649	.9686	.9804	28.57	.2131	.001887
2.633	11.603	5782.	.9682	.9716	.9824	28.63	.1934	.001943
2.737	11.707	5834.	.9705	.9735	.9837	28.68	.1837	.001963
2.745	11.872	5916.	.9734	.9760	.9853	28.74	.1686	.001995
2.750	12.020	5990.	.9757	.9781	.9866	28.78	.1549	.002024
2.816	12.179	6070.	.9780	.9801	.9879	28.83	.1412	.002052
2.844	12.300	6120.	.9797	.9814	.9888	28.96	.1308	.002074
2.871	12.414	6187.	.9803	.9821	.9891	28.99	.1209	.002095
2.915	12.404	6283.	.9837	.9852	.9911	28.94	.1049	.002128
2.916	12.794	6371.	.9861	.9874	.9924	28.99	.0907	.002157
2.987	12.915	6436.	.9889	.9899	.9939	28.99	.0804	.002179
3.020	13.058	6507.	.9899	.9909	.9949	29.05	.0695	.002201
3.070	13.274	6617.	.9913	.9927	.9956	29.10	.0532	.002235
3.076	13.382	6669.	.9920	.9932	.9963	29.11	.0460	.002250
3.120	13.580	6757.	.9932	.9938	.9963	29.13	.0325	.002278
3.193	13.766	6861.	.9945	.9949	.9970	29.16	.0200	.002303
3.224	13.942	6948.	.9958	.9961	.9977	29.18	.0096	.002325
3.264	14.034	6995.	.9962	.9965	.9979	29.19	.0042	.002336
3.277	14.173	7063.	.9969	.9972	.9983	29.20	0.0000	.002345
3.326	14.376	7166.	.9973	.9976	.9985	29.21	0.0000	.002345
3.347	14.475	7214.	.9976	.9979	.9987	29.22	0.0000	.002345
3.417	14.733	7342.	.9987	.9998	.9993	29.24	0.0000	.002345
3.417	15.079	7515.	.9991	.9992	.9995	29.25	0.0000	.002345
3.543	15.496	7723.	1.0001	1.0001	1.0000	29.27	0.0000	.002345
3.645	15.868	7898.	.9999	.9999	.9999	29.26	0.0000	.002345
3.714	16.067	8007.	1.0003	1.0003	1.0002	29.27	0.0000	.002345

TABLE A14. (CONT.)
PROFILE - JPL-5 - - - PITOT PRESSURE DATAEDGE MACH NO. = 2.1797
X = 7.62 CM
TOTAL PRESSURE = 1802E+06 N/Sec²
TOTAL TEMPERATURE = 322.72 DEG-K

UE = 562.73 M/SEC RE-DELTA-STAR = 133800.		DELTA STAR = .7507 CM RE-THETA = 43060.		THETA = .2415 CM MUMALL = .9817 CM=2/SEC		H = 3.107		
LEAST SQUARE FIT PARAMETERS				PI = .5751 YMIN = .085 CM		DELTA = 3.3810 CM		
UTANG = 20.9635 M/SEC CHISQ = .1419E-04				YMAX = 3.188 CM				
Y (%)	Y/THETA	Y-PLUS	M/WE	RHO/RHOC	U/UIF	II-PLUS	TAU/TAU-MAX	V/U
0.000	0.000	0.	0.0000	.5431	0.0000	0.00	1.0000	0.000000
.010	.042	21.	.3410	.5983	.4416	12.03	1.0000	0.000000
.016	.064	35.	.3752	.6075	.4814	13.16	.9997	.000002
.036	.152	78.	.4521	.6365	.5667	15.61	.9985	.000008
.048	.241	124.	.4978	.6564	.6145	17.01	.9971	.000015
.075	.365	181.	.5320	.6725	.6488	18.02	.9950	.000024
.105	.434	225.	.5499	.6813	.6642	18.55	.9933	.000031
.130	.561	276.	.5700	.6916	.6856	19.13	.9910	.000039
.157	.651	336.	.5786	.6961	.6935	19.37	.9884	.000049
.181	.741	397.	.5933	.7030	.7071	19.79	.9860	.000057
.212	.877	452.	.6040	.7099	.7169	20.09	.9828	.000068
.245	.993	512.	.6140	.7154	.7259	20.36	.9797	.000079
.265	1.093	566.	.6251	.7217	.7358	20.67	.9768	.000088
.293	1.214	626.	.6333	.7264	.7431	20.89	.9734	.000099
.314	1.332	713.	.6417	.7313	.7504	21.12	.9684	.000115
.344	1.450	778.	.6519	.7373	.7592	21.40	.9645	.000127
.402	1.656	859.	.6587	.7414	.7650	21.58	.9594	.000142
.453	1.844	962.	.6685	.7473	.7713	21.84	.9526	.000162
.491	2.014	1049.	.6761	.7520	.7766	22.04	.9466	.000180
.527	2.181	1125.	.6824	.7559	.7849	22.27	.9412	.000196
.570	2.360	1217.	.6909	.7613	.7919	22.43	.9343	.000214
.603	2.514	1299.	.6996	.7648	.7980	22.65	.9280	.000233
.641	2.654	1369.	.7041	.7684	.8026	22.77	.9224	.000248
.689	2.854	1472.	.7110	.7741	.8081	22.94	.9139	.000272
.735	3.063	1570.	.7200	.7800	.8152	23.17	.9053	.000295
.769	3.148	1626.	.7223	.7815	.8171	23.23	.9004	.000304
.806	3.338	1722.	.7316	.7877	.8243	23.47	.8914	.000333
.848	3.553	1833.	.7389	.7925	.8299	23.65	.8804	.000361
.880	3.679	1907.	.7431	.7955	.8332	23.75	.8741	.000378
.939	3.834	2004.	.7504	.8004	.8388	23.93	.8631	.000407
.992	4.009	2109.	.7589	.8062	.8451	24.14	.8516	.000437
1.022	4.231	2183.	.7678	.8080	.8491	24.24	.8434	.000448
1.055	4.369	2253.	.7687	.8117	.8510	24.33	.8353	.000474
1.101	4.557	2351.	.7717	.8152	.8547	24.46	.8237	.000507
1.134	4.694	2421.	.7777	.8194	.8591	24.60	.8151	.000529
1.177	4.873	2514.	.7846	.8242	.8640	24.76	.8035	.000558
1.220	5.052	2606.	.7915	.8294	.8691	24.93	.7916	.000587
1.257	5.206	2684.	.7964	.8329	.8726	25.05	.7811	.000613
1.294	5.366	2763.	.8016	.8367	.8744	25.17	.7702	.000640
1.334	5.500	2844.	.8055	.8398	.8751	25.24	.7570	.000672
1.377	5.703	2942.	.8122	.8445	.8838	25.42	.7448	.000701

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TABLE A14. (CONT.)
M/ME RMG/RMG

Y (CM)	Y/TWFTA	Y-PLUS	M/ME	RMG/RMG	U/U	U-PLUS	TAU/TAU-MAX	V/U
1.410	5.877	3032.	.8187	.8494	.8894	25.57	.7316	.000733
1.463	6.056	3124.	.8235	.8530	.8917	25.69	.7176	.000766
1.504	6.279	3213.	.8303	.8581	.8963	25.84	.7037	.000799
1.540	6.374	3289.	.8354	.8620	.8998	25.96	.6916	.000827
1.599	6.618	3414.	.8424	.8676	.9045	26.12	.6713	.000875
1.637	6.776	3495.	.8456	.8698	.9067	26.19	.6578	.000906
1.667	6.902	3560.	.8466	.8706	.9073	26.22	.6457	.000932
1.715	7.102	3663.	.8550	.8771	.9129	26.40	.6290	.000973
1.748	7.234	3734.	.8578	.8793	.9148	26.47	.6166	.001031
1.777	7.338	3787.	.8632	.8836	.9183	26.59	.6073	.001022
1.804	7.470	3853.	.8646	.8862	.9205	26.67	.5953	.001050
1.843	7.712	3978.	.8721	.8904	.9241	26.79	.5726	.001101
1.895	7.806	4027.	.8761	.8938	.9267	26.88	.5616	.001121
1.922	7.959	4105.	.8781	.8954	.9280	26.92	.5490	.001154
1.943	8.127	4192.	.8848	.9008	.9222	27.07	.5326	.001191
1.996	8.264	4283.	.8899	.9050	.9255	27.18	.5191	.001221
2.021	8.369	4317.	.8911	.9059	.9262	27.21	.5086	.001244
2.056	8.511	4390.	.8945	.9087	.9283	27.28	.4945	.001275
2.114	8.743	4515.	.9011	.9141	.9255	27.42	.4704	.001328
2.152	8.910	4596.	.9067	.9187	.9259	27.54	.4545	.001363
2.193	9.074	4683.	.9095	.9211	.9271	27.61	.4374	.001400
2.244	9.249	4792.	.9181	.9282	.9299	27.79	.4159	.001447
2.273	9.410	4854.	.9202	.9300	.9342	27.83	.4035	.001474
2.320	9.604	4954.	.9246	.9337	.9368	27.93	.3835	.001511
2.348	9.762	5036.	.9297	.9381	.9399	28.04	.3673	.001551
2.399	9.930	5122.	.9329	.9404	.9418	28.10	.3503	.001588
2.432	10.047	5193.	.9374	.9448	.9466	28.20	.3360	.001618
2.485	10.283	5307.	.9402	.9470	.9461	28.26	.3135	.001666
2.520	10.435	5393.	.9435	.9499	.9481	28.33	.2986	.001698
2.566	10.624	5480.	.9504	.9559	.9721	28.47	.2795	.001739
2.623	10.861	5602.	.9539	.9583	.9742	28.54	.2558	.001768
2.661	11.019	5684.	.9577	.9621	.9763	28.62	.2403	.001820
2.708	11.213	5784.	.9635	.9672	.9794	28.74	.2213	.001840
2.754	11.402	5862.	.9652	.9684	.9806	28.77	.2030	.001898
2.791	11.555	5960.	.9650	.9713	.9822	28.83	.1847	.001928
2.835	11.739	6055.	.9729	.9756	.9850	28.93	.1716	.001963
2.884	11.949	6164.	.9760	.9783	.9867	28.99	.1525	.002003
2.922	12.066	6260.	.9784	.9804	.9881	29.04	.1394	.002030
2.963	12.348	6370.	.9822	.9839	.9902	29.12	.1173	.002075
3.028	12.534	6468.	.9839	.9854	.9911	29.15	.1018	.002107
3.069	12.706	6554.	.9860	.9873	.9923	29.19	.0847	.002135
3.115	12.895	6652.	.9878	.9890	.9933	29.23	.0735	.002165
3.164	13.032	6723.	.9904	.9913	.9947	29.28	.0632	.002186
3.188	13.200	6809.	.9915	.9923	.9953	29.30	.0509	.002211
3.235	13.394	6910.	.9926	.9933	.9960	29.33	.0374	.002238
3.277	13.568	6999.	.9943	.9948	.9969	29.36	.0261	.002261
3.310	13.735	7070.	.9955	.9959	.9975	29.38	.0173	.002279
3.355	13.889	7165.	.9967	.9970	.9982	29.41	.0063	.002301
3.406	14.099	7273.	.9972	.9974	.9984	29.42	0.0000	.002314
3.437	14.230	7341.	.9977	.9979	.9987	29.43	0.0000	.002314
3.502	14.498	7479.	.9986	.9988	.9992	29.44	0.0000	.002314
3.534	14.630	7547.	.9992	.9993	.9995	29.46	0.0000	.002314
3.580	14.819	7645.	.9998	.9998	.9998	29.47	0.0000	.002314
3.632	15.035	7756.	.9999	.9999	.9999	29.47	0.0000	.002314
3.649	15.187	7834.	1.0005	1.0005	1.0003	29.48	0.0000	.002314
3.691	15.282	7823.	1.0003	1.0003	1.0002	29.48	0.0000	.002314

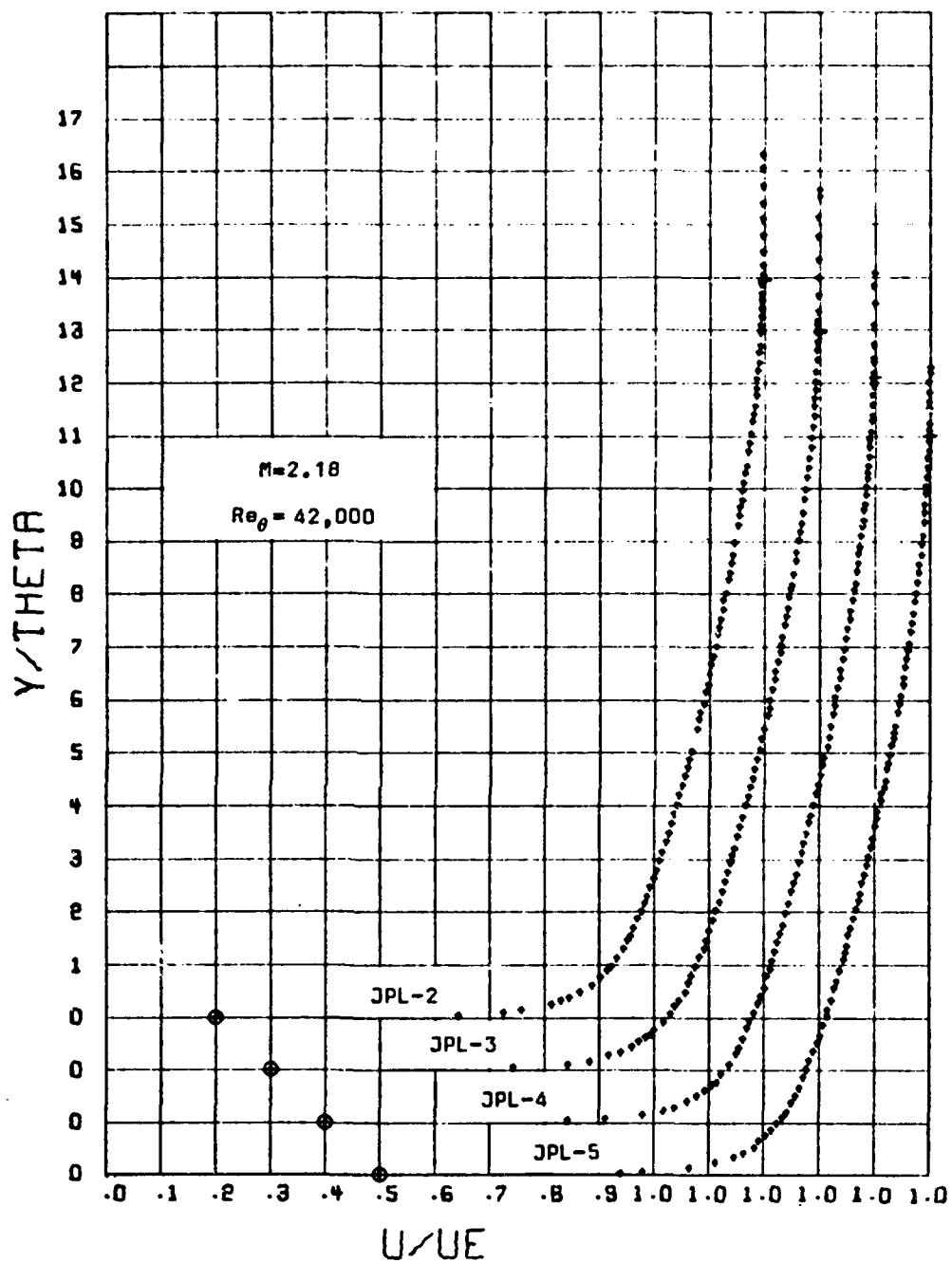


Figure A41. Mean Velocity Profiles.

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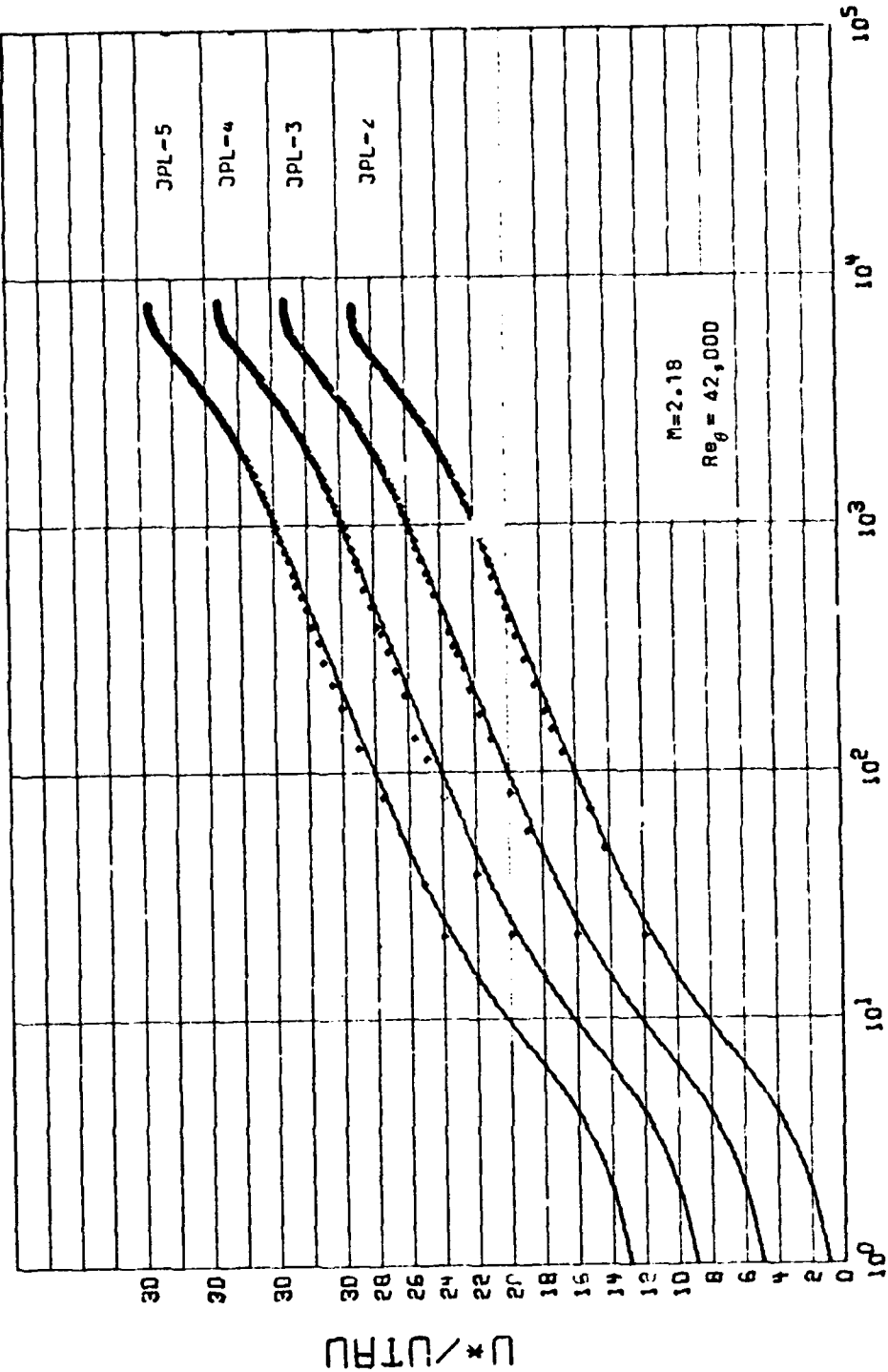
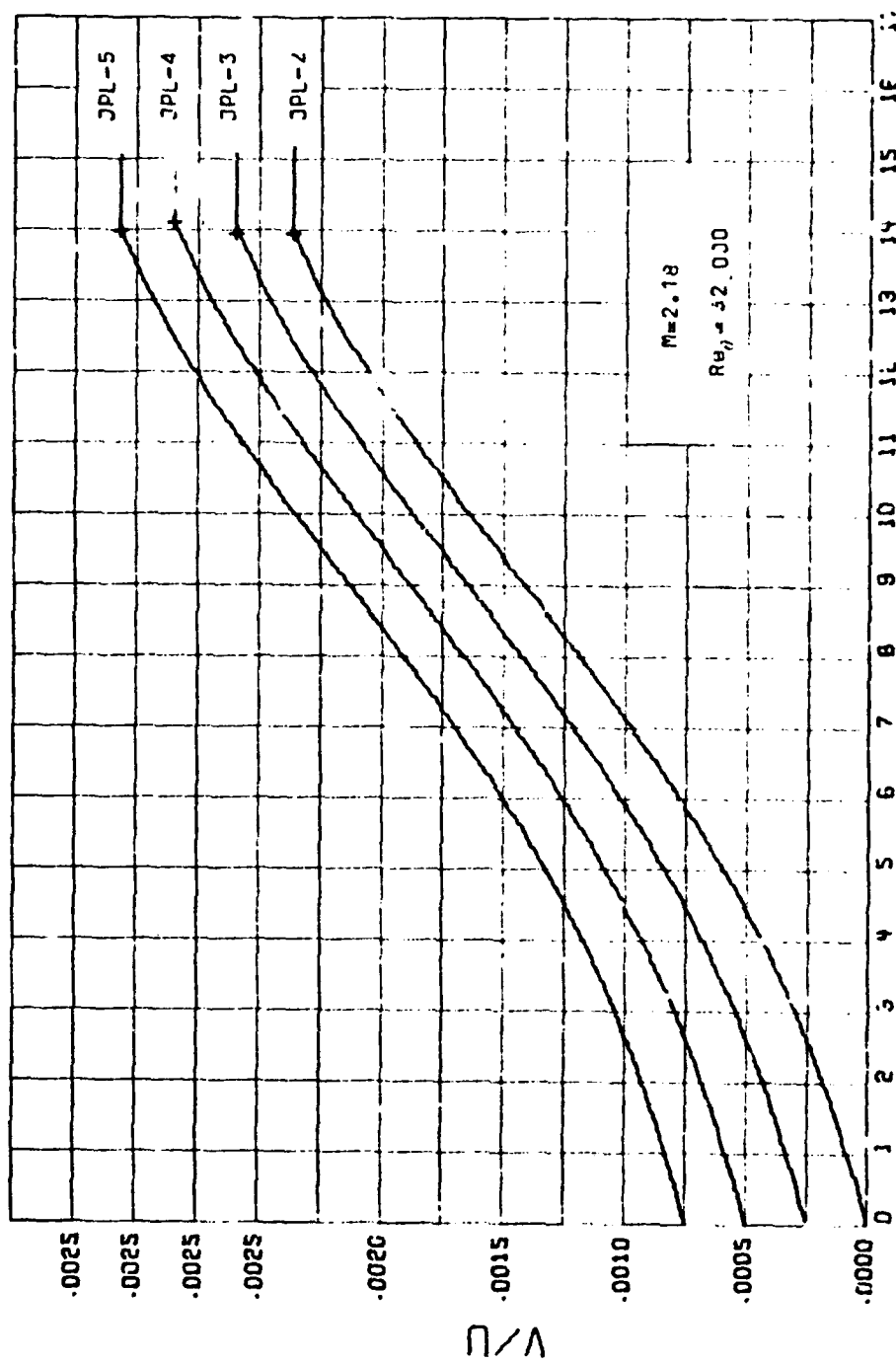


Figure A42. Van Driest Scaled Mean Velocity Profiles.



✓TII:ETA

Figure A43. Normal Velocity Distribution.

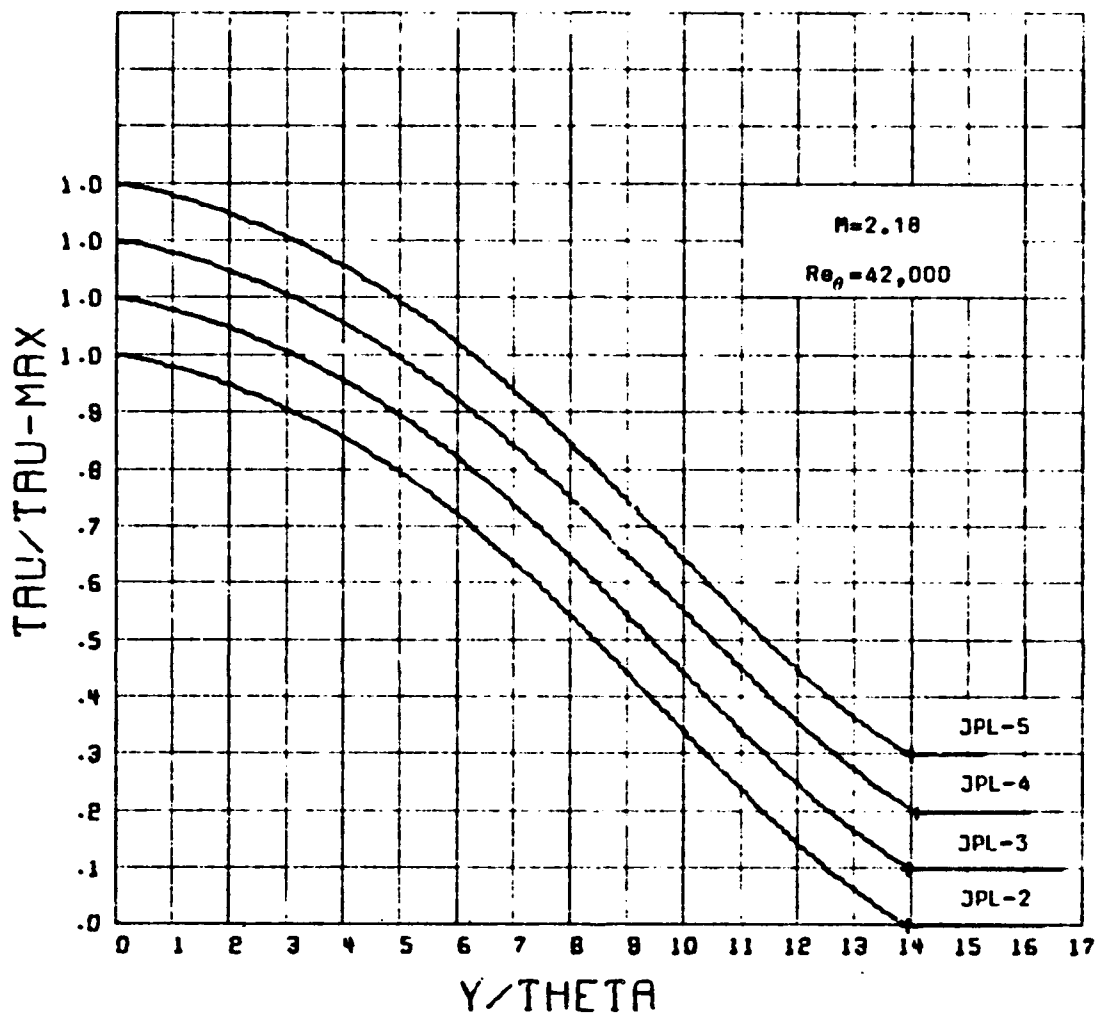


Figure A44. Shear Stress Distribution.

Y (CM)	Y/TMSTA	Y-PLUS	TABLE A14. M/ME	IC (CNT. 1) RHO/RHOE	U/UIE	II-PLUS	TAU/TAU-MAX	V/U
1.438	6.271	3100.	.8283	.8564	.8960	25.42	.7061	.000903
1.474	6.791	3185.	.8348	.8614	.8995	25.77	.7093	.000913
1.522	6.584	3281.	.8393	.8648	.9025	25.87	.7166	.000973
1.564	6.745	3371.	.8463	.8702	.9072	25.03	.7613	.000909
1.600	6.919	3468.	.8498	.8729	.9094	26.11	.6491	.000940
1.645	7.114	3544.	.8581	.8754	.9140	26.29	.6309	.000940
1.686	7.303	3639.	.8630	.8812	.9182	26.40	.6142	.001019
1.732	7.490	3732.	.8676	.8849	.9213	26.50	.5973	.001058
1.778	7.731	3853.	.8750	.8928	.9261	26.67	.5750	.001109
1.822	7.880	3927.	.8775	.8948	.9276	26.72	.5411	.001141
1.879	8.039	4006.	.8809	.8975	.9288	26.80	.5459	.001175
1.903	8.231	4102.	.8867	.9023	.9335	26.92	.5275	.001217
1.944	8.407	4189.	.8931	.9075	.9376	27.06	.5104	.001255
1.982	8.572	4272.	.8969	.9105	.9399	27.14	.4945	.001291
2.029	8.775	4373.	.9014	.9143	.9427	27.24	.4742	.001336
2.067	8.940	4455.	.9079	.9194	.9467	27.38	.4578	.001373
2.115	9.148	4559.	.9126	.9235	.9496	27.48	.4369	.001419
2.162	9.341	4600.	.9165	.9258	.9520	27.56	.4164	.001464
2.202	9.522	4745.	.9229	.9322	.9558	27.70	.3902	.001502
2.235	9.644	4814.	.9269	.9339	.9571	27.74	.3848	.001533
2.267	9.809	4928.	.9303	.9386	.9571	27.85	.3620	.001583
2.329	10.071	5019.	.9357	.9430	.9635	27.97	.3437	.001622
2.350	10.203	5084.	.9389	.9458	.9644	28.03	.3304	.001651
2.410	10.422	5194.	.9434	.9457	.9681	28.13	.3083	.001699
2.448	10.597	5276.	.9480	.9537	.9707	28.22	.2918	.001734
2.466	10.752	5358.	.9508	.9561	.9724	28.28	.2755	.001769
2.510	10.894	5429.	.9535	.9585	.9740	28.33	.2614	.001799
2.547	11.103	5533.	.9587	.9630	.9769	28.44	.2410	.001842
2.604	11.248	5615.	.9613	.9653	.9784	28.49	.2251	.001876
2.680	11.572	5687.	.9649	.9684	.9804	28.57	.2151	.001847
2.683	11.603	5782.	.9682	.9714	.9824	28.63	.1934	.001945
2.737	11.707	5834.	.9705	.9735	.9837	28.68	.1837	.001963
2.762	11.872	5916.	.9734	.9760	.9853	28.74	.1686	.001945
2.780	12.020	5990.	.9757	.9781	.9866	28.78	.1549	.002024
2.814	12.179	6070.	.9780	.9801	.9879	28.83	.1412	.002052
2.844	12.300	6130.	.9797	.9814	.9898	28.86	.1308	.002034
2.871	12.416	6187.	.9803	.9821	.9891	28.89	.1209	.002095
2.915	12.604	6283.	.9837	.9852	.9911	28.94	.1049	.002128
2.956	12.784	6371.	.9861	.9874	.9924	28.99	.0907	.002157
2.987	12.915	6434.	.9881	.9874	.9924	28.99	.0804	.002179
3.020	13.050	6502.	.9889	.9899	.9939	29.05	.0695	.002201
3.070	13.278	6617.	.9913	.9927	.9953	29.10	.0532	.002255
3.094	13.382	6669.	.9920	.9932	.9956	29.11	.0460	.002260
3.140	13.580	6767.	.9932	.9948	.9963	29.13	.0325	.002278
3.193	13.764	6861.	.9945	.9949	.9970	29.16	.0204	.002303
3.224	13.942	6948.	.9958	.9954	.9977	29.18	.0096	.002345
3.244	14.016	6995.	.9962	.9965	.9979	29.19	.0042	.002336
3.277	14.173	7063.	.9969	.9972	.9983	29.20	0.0000	.002344
3.324	14.376	7164.	.9973	.9976	.9985	29.21	0.0000	.002345
3.347	14.475	7214.	.9976	.9976	.9987	29.22	0.0000	.002345
3.417	14.733	7342.	.9987	.9984	.9993	29.24	0.0000	.002345
3.447	15.079	7515.	.9991	.9992	.9995	29.25	0.0000	.002345
3.543	15.496	7723.	1.0001	1.0001	1.0000	29.27	0.0000	.002345
3.645	15.868	7898.	.9999	.9999	.9999	29.26	0.0000	.002345
3.714	16.047	8007.	1.0003	1.0003	1.0002	29.27	0.0000	.002345

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TABLE A14. (CONT.)
PROFILE - JPL-5 - - - PITOT PRESSURE DATA

EDGE MACH NO.= 2.1797		TOTAL PRESSURE=.1802E+06 N/m ²		TOTAL TEMPERATURE= 322.72 DEG-K		M= 3.107	
X= 7.62 CM		DELTA STAR=.7507 CM		THETA=.2415 CM		M= 3.107	
RE-DELTA-STAR= 1.33800.		RE-THETA= 4.3060.		M= 3.107		DELTA= 3.3810 CM	
LEAST SQUARE FIT PARAMETERS		CF= .001907		P1= .5751		V/U	
UTAU= 20.9835 M/SEC		CF= .001907		V/U		TAU/TAU-MAX	
CH4O2= .141NF-04		YMAX= 3.188 CM		U/UF		U-PLUS	
Y (CM)	Y/THETA	Y-PLUS	M/ME	RHO/RHOE	U/UF	U-PLUS	V/U
0.000	0.000	0.	0.0000	.5431	0.0000	0.00	0.000000
.010	.042	21.	.3410	.5983	.4416	12.03	0.000000
.016	.068	35.	.3752	.6075	.4814	13.16	0.000002
.036	.142	78.	.4521	.6365	.5667	15.61	.000008
.059	.241	124.	.4978	.6564	.6145	17.01	.000315
.083	.352	181.	.5320	.6725	.6488	18.02	.000024
.105	.436	225.	.5499	.6813	.6682	18.55	.000031
.130	.541	279.	.5700	.6916	.6874	19.13	.000039
.157	.651	336.	.5786	.6961	.6935	19.37	.000049
.181	.741	387.	.5933	.7039	.7071	19.79	.000057
.212	.877	452.	.6040	.7098	.7169	20.09	.000078
.240	.993	512.	.6140	.7154	.7259	20.36	.000079
.265	1.098	566.	.6251	.7217	.7358	20.67	.000099
.293	1.216	626.	.6333	.7264	.7431	20.89	.000115
.314	1.342	713.	.6417	.7313	.7504	21.12	.000127
.344	1.508	778.	.6519	.7373	.7592	21.40	.000142
.402	1.666	859.	.6587	.7414	.7650	21.58	.000162
.450	1.844	962.	.6685	.7473	.7733	21.84	.000160
.491	2.034	1049.	.6761	.7520	.7796	22.04	.000160
.527	2.181	1125.	.6824	.7559	.7849	22.20	.000196
.570	2.360	1217.	.6909	.7613	.7919	22.43	.000215
.608	2.518	1299.	.6996	.7668	.7990	22.65	.000233
.641	2.654	1369.	.7041	.7694	.8024	22.77	.000249
.689	2.854	1472.	.7110	.7741	.8081	22.94	.000272
.735	3.043	1570.	.7200	.7800	.8152	23.17	.000295
.760	3.148	1624.	.7223	.7815	.8171	23.23	.000309
.806	3.339	1722.	.7316	.7877	.8243	23.47	.000333
.848	3.553	1833.	.7388	.7925	.8299	23.65	.000361
.889	3.679	1892.	.7431	.7954	.8332	23.75	.000378
.918	3.884	2006.	.7504	.8004	.8388	23.93	.000407
.948	4.099	2109.	.7598	.8062	.8451	24.14	.000437
1.022	4.231	2183.	.7628	.8090	.8510	24.24	.000458
1.055	4.368	2243.	.7667	.8117	.8510	24.33	.000478
1.101	4.557	2351.	.7717	.8152	.8547	24.46	.000507
1.134	4.694	2421.	.7777	.8194	.8591	24.60	.000529
1.177	4.873	2514.	.7844	.8240	.8640	24.76	.000558
1.220	5.052	2606.	.7915	.8294	.8691	24.93	.000587
1.257	5.204	2696.	.7964	.8329	.8726	25.05	.000613
1.294	5.356	2763.	.8016	.8367	.8764	25.17	.000640
1.314	5.440	2856.	.8055	.8396	.8791	25.24	.000672
1.377	5.703	2942.	.8122	.8445	.8838	25.42	.000701
							.7448

Y (CM)	Y/TWETA	Y-PLUS	TABLE A14. (CONT.) N/NE RHO/RHPE	U/UE	U-PLUS	TAU/TAU-MAX	V/U
1.419	5.877	3032.	.8187	.8454	25.57	.7316	.000733
1.463	6.056	3124.	.8235	.8510	25.49	.7176	.000766
1.506	6.239	3213.	.8303	.8581	25.84	.7037	.000799
1.540	6.374	3289.	.8354	.8620	25.96	.6916	.000827
1.598	6.618	3414.	.8424	.8676	26.12	.6713	.000875
1.637	6.776	3495.	.8456	.8698	26.19	.6572	.000906
1.667	6.902	3560.	.8466	.8698	26.22	.6467	.000932
1.715	7.102	3683.	.8550	.8771	26.47	.6290	.000973
1.748	7.234	3734.	.8578	.8793	26.47	.6166	.001001
1.772	7.338	3785.	.8632	.8836	26.59	.6075	.001022
1.804	7.470	3853.	.8666	.8862	26.67	.5953	.001050
1.843	7.712	3978.	.8721	.8904	26.79	.5726	.001101
1.895	7.804	4027.	.8761	.8938	26.88	.5616	.001121
1.922	7.959	4105.	.8781	.8956	26.92	.5490	.001154
1.943	8.127	4192.	.8848	.9009	27.07	.5326	.001191
1.966	8.264	4263.	.8899	.9050	27.18	.5191	.001221
2.021	8.149	4317.	.8911	.9059	27.21	.5086	.001244
2.056	8.511	4390.	.8945	.9087	27.28	.4945	.001275
2.114	8.743	4515.	.9011	.9161	27.42	.4704	.001328
2.147	8.910	4596.	.9067	.9187	27.54	.4545	.001383
2.193	9.078	4683.	.9095	.9211	27.61	.4374	.001400
2.244	9.249	4792.	.9181	.9282	27.79	.4159	.001447
2.273	9.410	4854.	.9202	.9301	27.83	.4035	.001474
2.320	9.604	4954.	.9246	.9337	27.93	.3835	.001517
2.358	9.742	5036.	.9297	.9381	28.04	.3673	.001551
2.399	9.930	5122.	.9329	.9409	28.10	.3500	.001588
2.432	10.067	5193.	.9376	.9458	28.20	.3360	.001618
2.485	10.288	5307.	.9402	.9470	28.26	.3135	.001666
2.520	10.435	5383.	.9435	.9499	28.33	.2986	.001698
2.566	10.624	5480.	.9504	.9558	28.47	.2795	.001738
2.623	10.861	5602.	.9539	.9589	28.54	.2558	.001788
2.661	11.014	5684.	.9577	.9621	28.62	.2403	.001820
2.708	11.213	5784.	.9635	.9672	28.76	.2213	.001860
2.754	11.402	5882.	.9652	.9688	28.77	.2030	.001898
2.791	11.555	5960.	.9680	.9713	28.83	.1887	.001948
2.855	11.739	6055.	.9729	.9756	28.93	.1716	.001963
2.886	11.949	6164.	.9760	.9783	28.99	.1525	.002003
2.922	12.096	6240.	.9784	.9804	29.04	.1394	.002030
2.983	12.349	6370.	.9822	.9839	29.12	.1173	.002075
3.028	12.538	6468.	.9839	.9854	29.15	.1016	.002107
3.069	12.704	6554.	.9860	.9873	29.19	.0882	.002135
3.115	12.895	6652.	.9878	.9890	29.23	.0735	.002165
3.144	13.032	6723.	.9904	.9913	29.28	.0637	.002186
3.188	13.200	6809.	.9915	.9923	29.30	.0509	.002211
3.235	13.394	6910.	.9926	.9933	29.33	.0374	.002238
3.277	13.568	6999.	.9943	.9948	29.36	.0260	.002261
3.310	13.795	7070.	.9955	.9959	29.38	.0173	.002279
3.355	13.889	7165.	.9967	.9970	29.41	.0063	.002301
3.406	14.095	7273.	.9972	.9974	29.42	0.0000	.002314
3.437	14.230	7341.	.9977	.9979	29.43	0.0000	.002314
3.502	14.498	7479.	.9988	.9988	29.44	0.0000	.002314
3.536	14.630	7547.	.9992	.9993	29.46	0.0000	.002314
3.580	14.819	7645.	.9998	.9998	29.47	0.0000	.002314
3.612	15.035	7756.	.9999	.9999	29.47	0.0000	.002314
3.649	15.187	7834.	1.0005	1.0005	29.48	0.0000	.002314
3.691	15.282	7883.	1.0003	1.0003	29.48	0.0000	.002314

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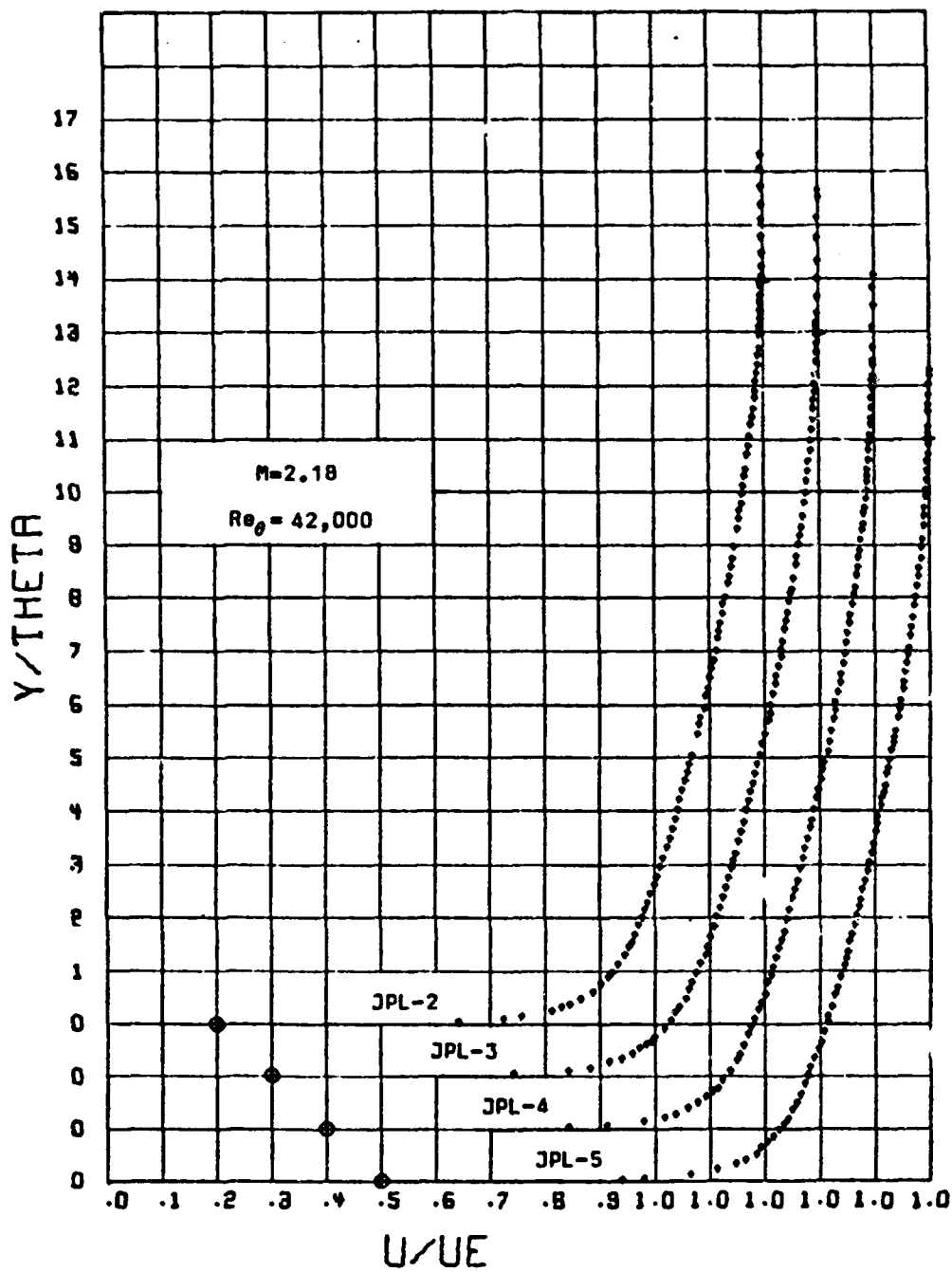


Figure A41. Mean Velocity Profiles.

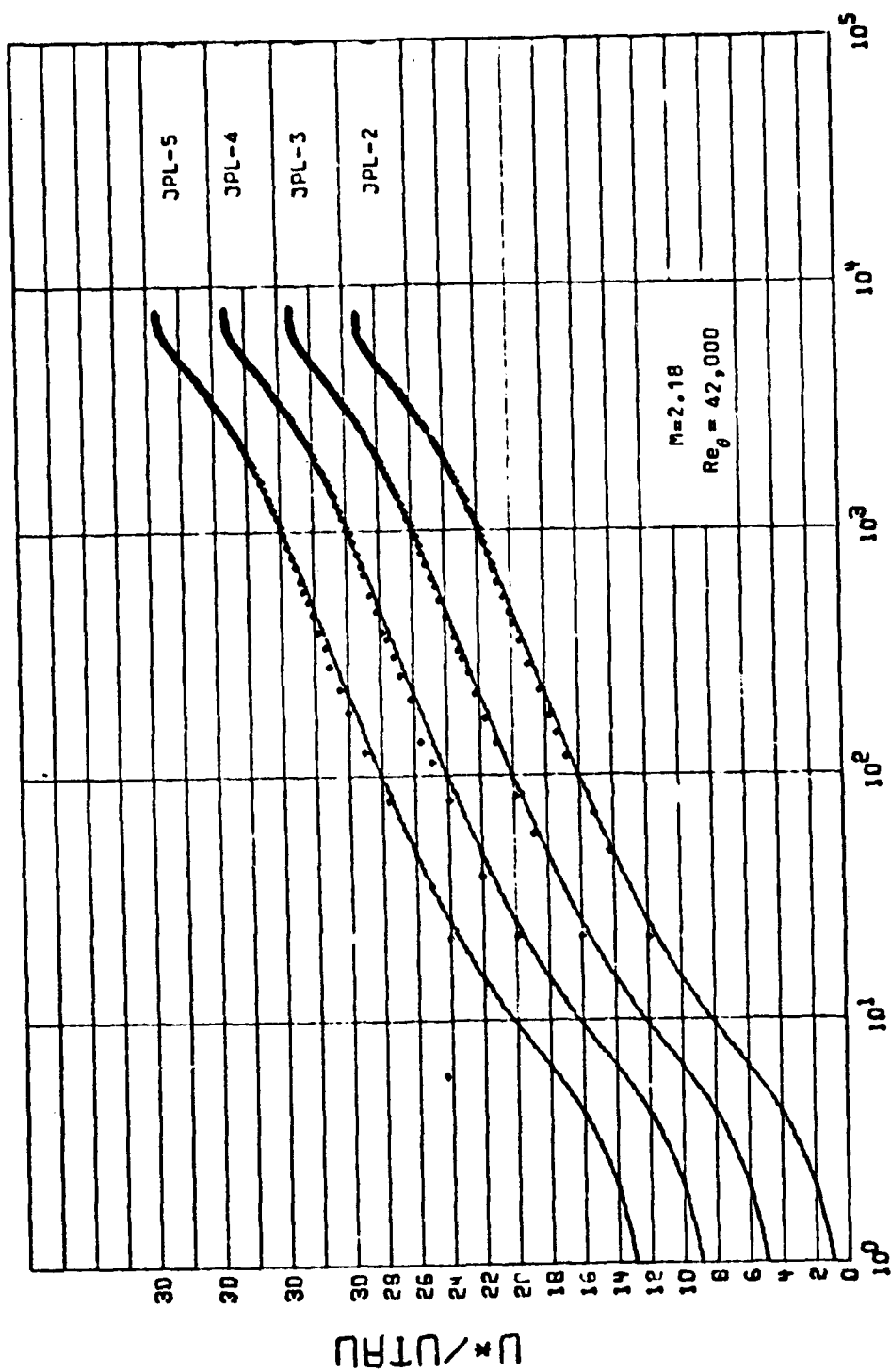


Figure A42. Van Driest Scaled Mean Velocity Profiles.

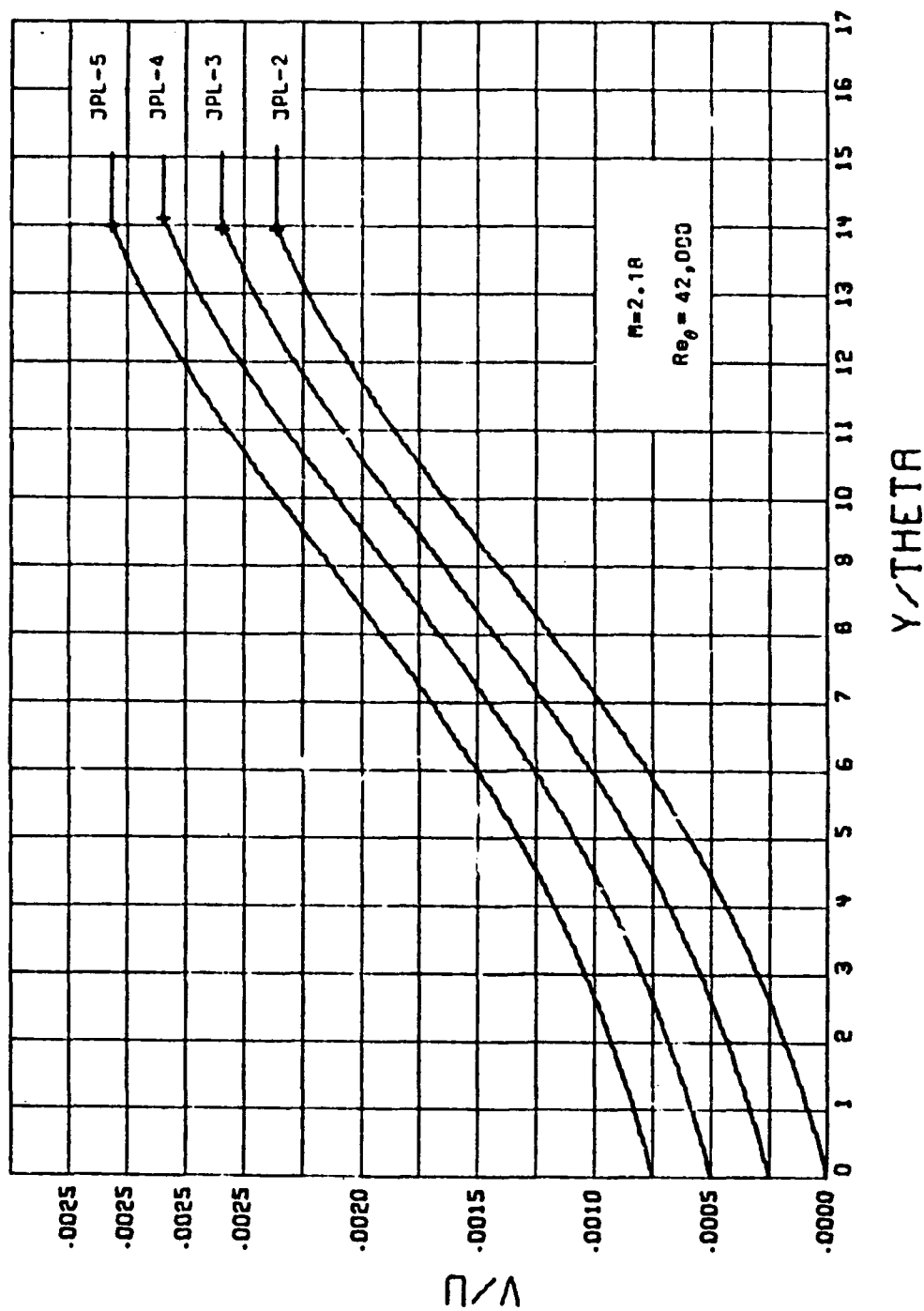


Figure A43. Normal Velocity Distribution.

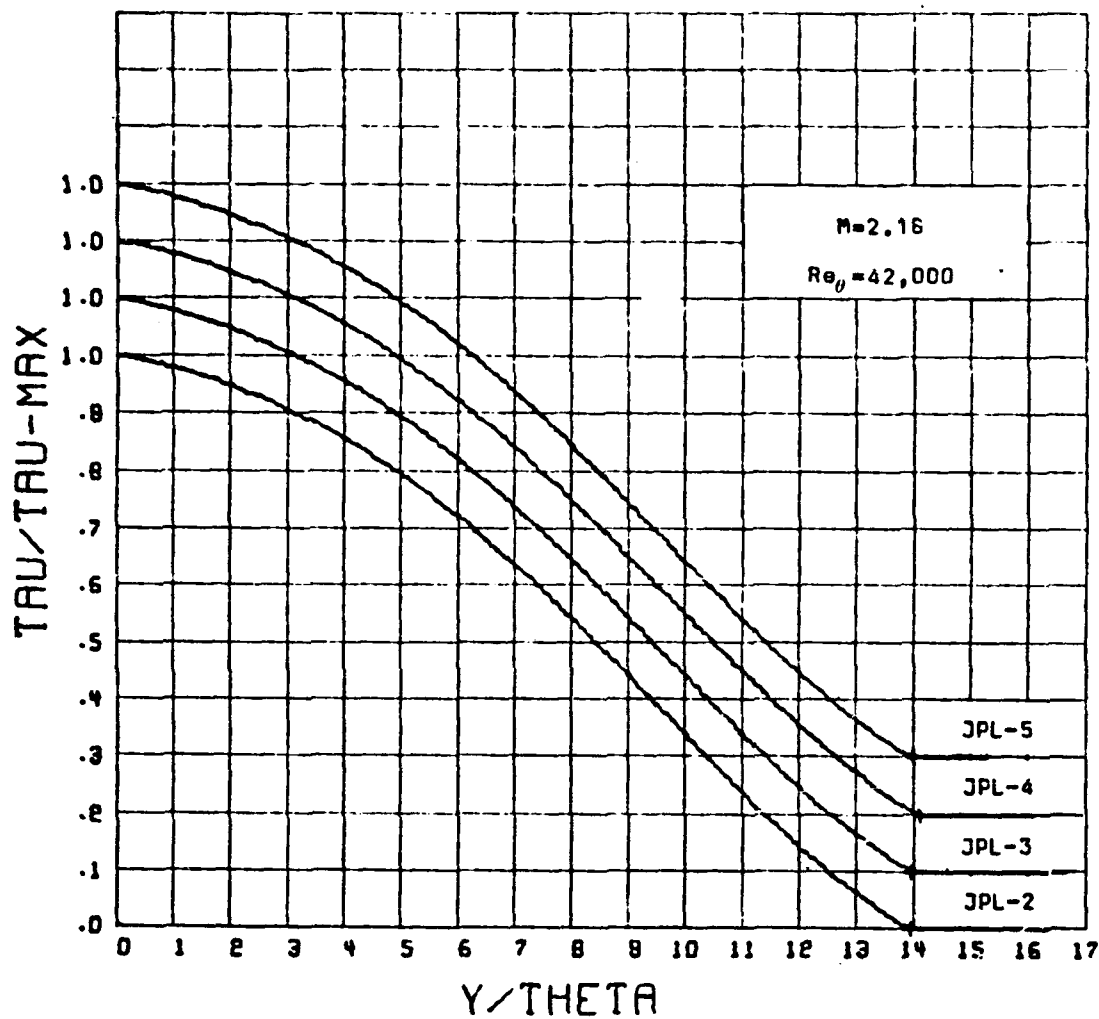


Figure A44. Shear Stress Distribution.

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Nomenclature

Symbol	Equation	Meaning
c	(19)	constant in wall law (5.0)
C_f	(7)	local friction coefficient
C_p	(59)	pressure coefficient for Preston tube
D	(52)	diameter of Preston tube
$f(y^+)$	(40)	function in wall law
$f_2(T')$	(54)	function of reference temperature
F_f	(62)	scaling function for C_f
F_θ	(63)	scaling function for Re_θ
H	(6)	boundary-layer profile form parameter
m	(14)	function of Mach number
M_p	(53)	pressure Mach number for Preston tube
M_T	(58)	friction Mach number for Preston tube
MDMB	(A3)	measure of momentum balance
P, Q	(30), (31)	definite integrals of velocity profile
r	(2)	temperature recovery factor (0.885)
Re_D	(22)	Reynolds number based on D
Re_θ		Reynolds number based on θ
u, v		streamwise and normal velocity components
u_τ	(15)	friction velocity
U	(25)	dimensionless velocity scaled according to Van Driest

Nomenclature (Cont.)

Symbol	Equation	Meaning
x, y		streamwise and normal coordinates
Y	(20)	distance from wall in outer variables
β	(A1)	pressure-gradient parameter
δ		boundary-layer thickness
δ^*	(4)	boundary-layer displacement thickness
θ	(5)	boundary-layer momentum thickness
κ	(9)	Kármán constant (0.41)
μ		viscosity
ν		kinematic viscosity
Π	(19)	strength of wake component
τ		shearing stress

Subscripts

$()_e$	edge or external value
$()_o$	stagnation value
$()_w$	wall value

Superscripts

$()^1$	value for incompressible flow
$()'$	value at effective temperature
$()^+$	value made dimensionless with u_τ, v_w
$()^*$	value for Van Driest scaling

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